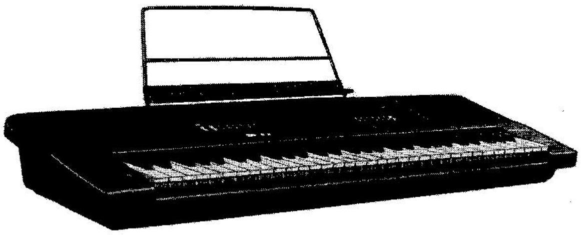
ORDER NO. EMID941534
A5

Service Manual

PCM Keyboard

SX-KN1200

(M), (MC), (XM), (EN), (EH), (EF), (EZ), (EW), (EA), (EP), (EK), (XL), (XR), (XS), (XD), (X), (XT)



AREAS

(M):	U.S.A.
(MC):	Canada
(XM):	Mexico
(EN):	Norway, Sweden, Denmark, Finland
(EH):	Holland, Belgium
(EF):	France, Italy
(EZ):	Germany
(EW):	Switzerland
(EA):	Austria
(EP):	Spain, Portugal, Greece, Russia
(EK):	the United Kingdom
(XL):	New Zealand
(XR):	Australia
(XS):	Malaysia, Singapore, South Africa
(XD):	Saudi Arabia, Kuwait
(X):	the Middle East, Indonesia, Hong Kong, the Philippines, Thailand
(XT):	Taiwan

⚠ **WARNING**

This service literature is designed for experienced repair technicians only and is not designed for use by the general public. It does not contain warnings or cautions to advise non-technical individuals of potential dangers in attempting to service a product. Products powered by electricity should be serviced or repaired only by experienced professional technicians. Any attempt to service or repair the product or products dealt with in this service literature by anyone else could result in serious injury or death.

■ Specifications

KEYBOARD	61 KEYS (WITH INITIAL TOUCH)
SOUND GENERATOR	PCM
MAXIMUM NUMBER OF NOTES PRODUCED SIMULTANEOUSLY	32 NOTES
SOUNDS	200 SOUNDS
EFFECTS	DIGITAL EFFECT, SUSTAIN, DIGITAL REVERB, PITCH BEND, MODULATION
PART SELECT	RIGHT 1, RIGHT 2, LEFT
TRANSPOSE	G-C-F#
RHYTHM	100 RHYTHMS
CONTROLS	MAIN VOLUME, OTHER BALANCE, CONDUCTOR, START/STOP, INTRO & ENDING, FILL IN 1, FILL IN 2, VARIATION, COUNT INTRO , SYNCHRO & BREAK, TEMPO, SPLIT POINT, MUTE
MANUAL PERCUSSION	1 ,2, 3
AUTO PLAY CHORD	ONE FINGER, FINGERED, PIANIST, MEMORY, ON BASS, MUSIC STYLE ARRANGER, SOUND ARRANGER
ONE TOUCH PLAY	○ (ONE TOUCH PLAY/MUSIC STYLE SELECT)
TECHNI-CHORD	○
PANEL MEMORY	2 BANKS × 8, SET
SEQUENCER	16 TRACKS STORAGE CAPACITY : APPROX. 19000 NOTES INPUT MODES : EASY RECORD, REALTIME RECORD, STEP RECORD FUNCTIONS : TRACK ASSIGN, EDIT (SONG CLEAR, TRACK CLEAR, VELOCITY CHANGE, QUANTIZE, TRACK MERGE, MEASURE ERASE, MEASURE COPY, MESURE INSERT, MEASURE DELETE), PUNCH RECORD, PLAY, MEDLEY
COMPOSER	5 PARTS : BASS, ACCOMP 1, ACCOMP 2, ACCOMP 3, DRUMS STORAGE CAPACITY : APPROX. 8600 NOTES INPUT MODES : REALTIME RECORD, STEP RECORD FUNCTIONS : COMPOSER LOAD, CLEAR, MODE SELECT, COPY, LOAD SINGLE COMPOSER PATTERN, BEND RANGE MEMORY : 2 BANKS × 10 (MEMORY 1–6, INTRO, FILL IN 1, FILL IN 2, ENDING)
DISK DRIVE	3.5 INCH DISK DRIVE FOR 2HD (1.44 MB), 2DD (720 KB) DISK LOAD, DISK SAVE, MIDI FILE LOAD, MIDI FILE SAVE, DISK FORMAT, LOAD SINGLE COMPOSER PATTERN, LOAD SINGLE SOUND MEMORY
SOUND SETTING	PART SETTING (VOLUME, SUSTAIN, PAN, KEY SHIFT, TUNE, PITCH BEND RANGE, GLIDE SETTING), TOUCH & TUNE, TECHNI-CHORD TYPE, LEFT HOLD, REVERB

Technics

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SOUND EDIT	EASY EDIT, GENERAL EDIT (OCTAVE SHIFT, VIBRATO, AUTOBEND, REVERB), TONE EDIT (TONE, LEVEL & PITCH, ENVELOPE, FILTER), EFFECT EDIT MEMORY : 36
MODE SET	INITIAL, FOOT SWITCH SETTING, PAD SETTING, LCD CONTRAST, MIDI BASIC CHANNEL, MIDI OTHER SETTINGS, MIDI PRESETS, GM MODE SET, BULK DUMP
DISPLAY	LCD (40 CHARACTERS × 2 LINES) EXIT, DISPLAY HOLD
DEMO	○
TERMINALS	PHONES, LINE OUT (R/R+L, L), FOOT SW, EXP PEDAL, MIDI (IN, OUT, THRU)
OUTPUT	10 W × 2
SPEAKERS	12 cm × 2, 6.5 cm × 2
POWER REQUIREMENT	75 W, 65 W (NORTH AMERICA AND MEXICO)
	AC120/220/240 V 50/60 Hz AC120 V 60 Hz. (NORTH AMERICA AND MEXICO) AC230 V 50/60 Hz. (NEW ZEALAND AND EUROPE EXCEPT FOR UNITED KINGDOM) AC 230-240 V 50/60 Hz. (UNITED KINGDOM)
DIMENSIONS (W × H × D)	103.9 cm × 13.7 cm × 37.0 cm (40-29/32" × 5-13/32" × 14-9/16") WITHOUT MUSIC STAND
NET WEIGHT	10.8 Kg (23.8 lbs.) WITHOUT MUSIC STAND
ACCESSORIES	MUSIC STAND, AC CORD, RHYTHM PATTERN DISK

*Specification are subject to change without notice for further improvement.

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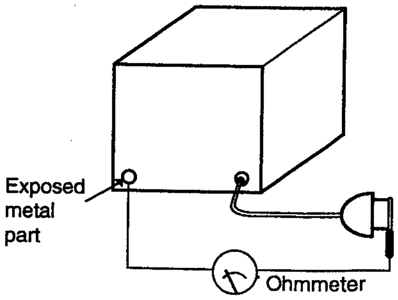
SAFETY PRECAUTION (This "safety precaution"is for the U.S.A. only)

● Safety Precaution

1. Before servicing, unplug the power cord to prevent an electric shock.
2. When placing parts, use only the manufacturer's recommended components for safety.
3. Check the condition of the power cord. Replace if wear or damage is evident.
4. After servicing, be sure to restore the lead dress, insulation barriers, insulation papers, shields, etc.
5. Before returning the serviced equipment to the customer, be sure to make the following insulation resistance test to prevent the customer from being exposed to a shock hazard.

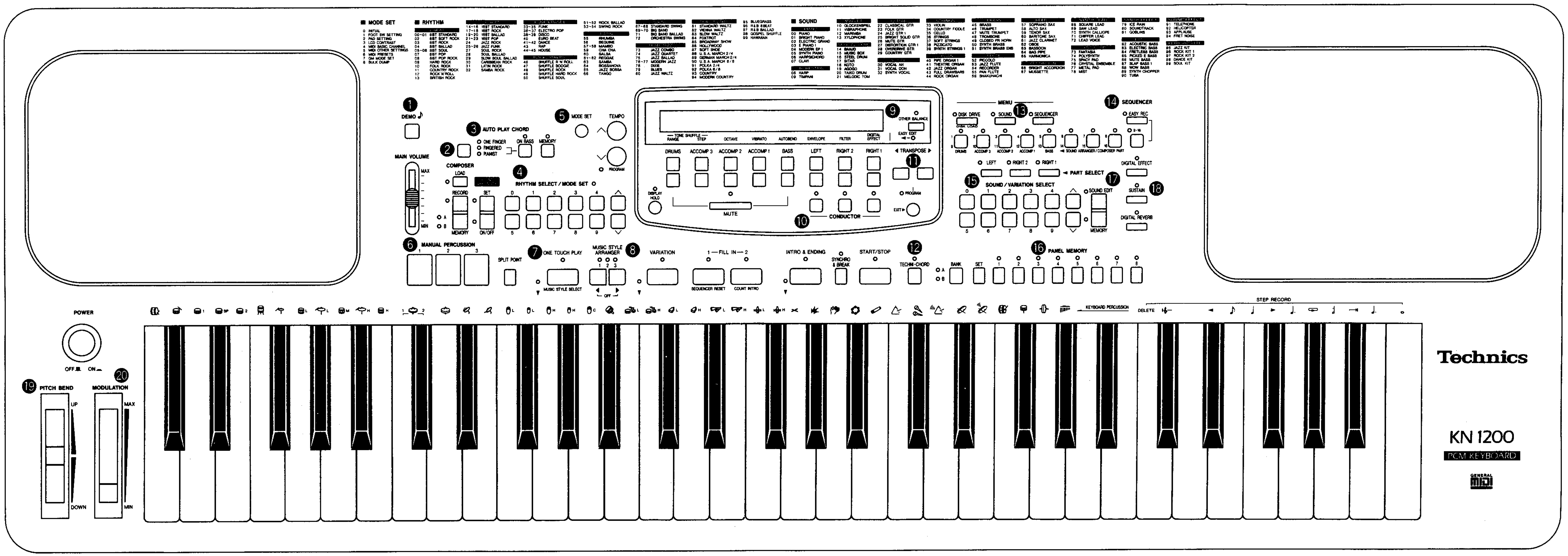
● Insulation Resistance Test

1. Unplug the power cord and short the prongs of the plug with a jumper wire.
2. Turn on the power switch.
3. Measure the resistance value with an ohmmeter between the jumpered AC plug and each exposed metal cabinet part, such as screw heads, connectors, control shafts, handle brackets, etc. Measurements should range from 4 MΩ to infinity for all exposed parts.



Resistance = 4MΩ to ∞

ARRANGEMENT OF CONTROL PANEL


MODE SET
RHYTHM
SOUND
DEMO
MAIN VOLUME
MAX
MIN
AUTO PLAY CHORD
ONE FINGER
FINGERED
PIANIST
ON BASS
MEMORY
COMPOSER
LOAD
RECORD
SET
ON/OFF
MODE SET
TEMPO
PROGRAM
RHYTHM SELECT / MODE SET
DRUMS
ACCOMP 3
ACCOMP 2
ACCOMP 1
BASS
LEFT
RIGHT 2
RIGHT 1
TRANSPOSE
OTHER BALANCE
EASY EDIT
MUTE
DISPLAY HOLD
CONDUCTOR
EXIT
MENU
DISK DRIVE
SOUND
SEQUENCER
EASY REC
PART SELECT
SOUND / VARIATION SELECT
SOUND EDIT
DIGITAL EFFECT
SUSTAIN
DIGITAL REVERB
MANUAL PERCUSSION
SPLIT POINT
ONE TOUCH PLAY
MUSIC STYLE ARRANGER
MUSIC STYLE SELECT
VARIATION
FILL IN
SEQUENCER RESET
COUNT INTRO
INTRO & ENDING
SYNCHRO & BREAK
START/STOP
TECHNI-CHORD
PANEL MEMORY
BANK
KEYBOARD PERCUSSION
STEP RECORD
DELETE
POWER
OFF ON
PITCH BEND
UP
DOWN
MODULATION
MAX
MIN
Technics
KN 1200
PCM KEYBOARD
GENERAL MIDI

❶ DEMO

Pre-recorded performances are used to demonstrate the individual appear of the rhythms, sounds and other features.

❷ COMPOSER

Create original rhythm patterns, either in realtime or with the step record method, or modify preset rhythms. Store up to 12 new rhythms in the reserved memory locations and recall them as you play, just like the preset rhythms.

❸ AUTO PLAY CHORD

This feature is activated when the **ONE FINGER** , **FINGERED** or **PIANIST** button is turned on. An automatic accompaniment appropriate for the selected rhythm is produced when you play a chord. **MEMORY** allows you to continue the accompaniment even after the chord keys are released. The volume for each part of the **AUTO PLAY CHORD (DRUMS, BASS, ACCOMP 1, 2, 3**) is adjusted with the respective balance buttons below the display.

❹ RHYTHM SELECT

Various rhythm patterns are stored in the instrument's memory. Other rhythm controls are **START/STOP, SYNCHRO & BREAK, INTRO & ENDING, VARIATION, COUNT INTRO** and **FILL IN 1** and **2.** The volume is adjusted with the **DRUMS** balance buttons below the display.

❺ MODE SET

The settable functions in this mode include initialization, foot switch and PAD button function-assignment, and setting related to MIDI operation.

❻ MANUAL PERCUSSION

The three buttons are used to add percussion sounds during your performance. The desired **KEYBOARD PERCUSSION** sounds are easily stored in the buttons. The buttons can also be programmed for other functions, such as rhythm start/stop.

❼ ONE TOUCH PLAY

Select a rhythm and press the **ONE TOUCH PLAY** button until the panel settings change. The sounds and effects perfect for the selected rhythm are automatically set in seconds. Or press the **ONE TOUCH PLAY** button briefly to access the MUSIC STYLE SELECT display. Choose one of the many music styles and the appropriate sounds, effects and even rhythm are set instantly.

❽ MUSIC STYLE ARRANGER

A tap of a button during your performance changes the rhythm and sounds to a simpler or flashier arrangement to match the feeling of the music.

❾ DISPLAY

Displays performance information, function settings and other messages.

❿ CONDUCTOR

These buttons allow you to assign a different sound to each part, and then assign the desired part to the entire keyboard, assign a different part to each section of the keyboard, or mix parts. When the keyboard is divided into sections, change the dividing point with the **SPLIT POINT** button.

⓫ TRANSPOSE

C is the standard setting, but you can raise or lower the key of the entire instrument with these two buttons. The transposed key is shown on the normal performance display.

⓬ TECHNI-CHORD

Chord notes played on the left section of the keyboard are added to melody notes played on the right section.

⓭ SOUND

This button is used for making the various sound, volume and effect settings for each part, as well as tuning and **TECHNI-CHORD** type, by reading the display.

⓮ SEQUENCER

With this feature you can separately play and record the parts for an entire song. Then have the whole ensemble performance played back automatically. This is a true 16-track sequencer, with full realtime recording, step recording and editing features.

⓯ SOUND/VARIATION SELECT

Various sounds are stored in the instrument's memory.

⓰ PANEL MEMORY

Set up the sounds and effects, and then store them in these 16 memories (2 BANKS X 8 memory locations) buttons for instant recall as you play. You can expand the range of storable settings to include the rhythm selection, tempo setting and more.

⓱ SOUND EDIT

Modify preset sounds to create new and unique sounds.

⓲ Effects

Turn the **DIGITAL REVERB** button on to add reverberation to the sound. **DIGITAL EFFECT** gives the sound a thickness and diffusion. When **SUSTAIN** is on, the musical tones fade gradually after the keys are released.

⓳ PITCH BEND

This wheel is moved up or down with your hand to create a continuous change in pitch. The wheel returns to the center position automatically when it is released.

⓴ MODULATION

Add vibrato to the sound by turning the wheel upwards.

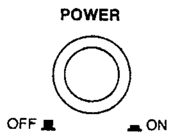
DISK DRIVE

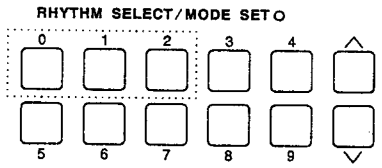
This Disk Drive allows you to store up to 20 **SEQUENCER** performances and other data on 3.5-in. 2DD or 2HD memory disk.

INITIAL SETTING

- The initial setting function is used to return to the original factory settings, and to reset the customer settings and misoperations.

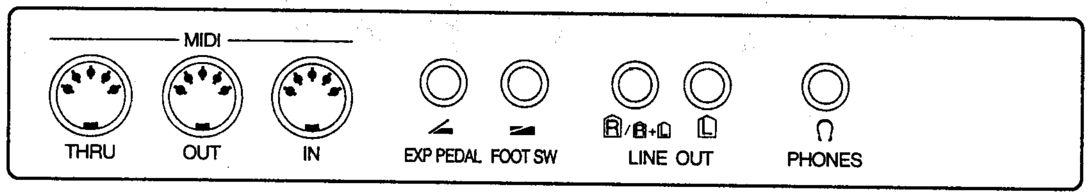
1. Press the **POWER** button to turn off the instrument.
2. While pressing the **0**,**1** and **2** buttons on the **RHYTHM SELECT** number pad at the same time, turn the **POWER** button on again.





NOTE:
All stored data in the **SEQUENCER** and **COMPOSER** and other setting are initialized with this operation.

TERMINALS



(on the rear panel)

MIDI (Musical Instrument Digital Interface)
MIDI is the standard specification that enables connection to equipment such as synthesizers and personal computers. Data transmission and reception are possible between the Technics Keyboard and other instruments provided with MIDI terminals.

IN : The terminal that receives data from external equipment.
OUT : The terminal that transmits data from this instrument to external equipment.
THRU: The terminal that transfers data from the **IN** terminal directly to other equipment.

- Use a 5-pin DIN cord (less than 15 m long) for these connections.

EXP PEDAL
The optional SZ-E2 Expression Pedal can be connected to this terminal to control the volume.

FOOT SW
The optional SZ-P1 Foot Switch can be connected to this terminal to control various functions.

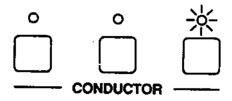
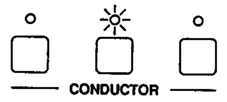
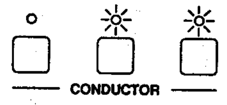
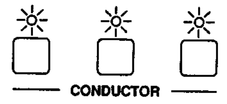
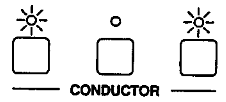
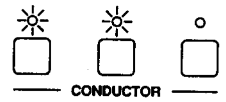
LINE OUT (output level 1 Vrms, 600 Ω)
By connecting an external high-power amplifier, the sound can be reproduced at a high volume. To output monaural sound, connect the external equipment to the **R/R+L** terminal. (Do not connect the **L** terminal.)

PHONES (∩) (Use headphone with over 16 Ω impedance.)
For silent practice headphones may be used. When plugged in, the speaker system is automatically switched off, and sound is heard only through the headphones.

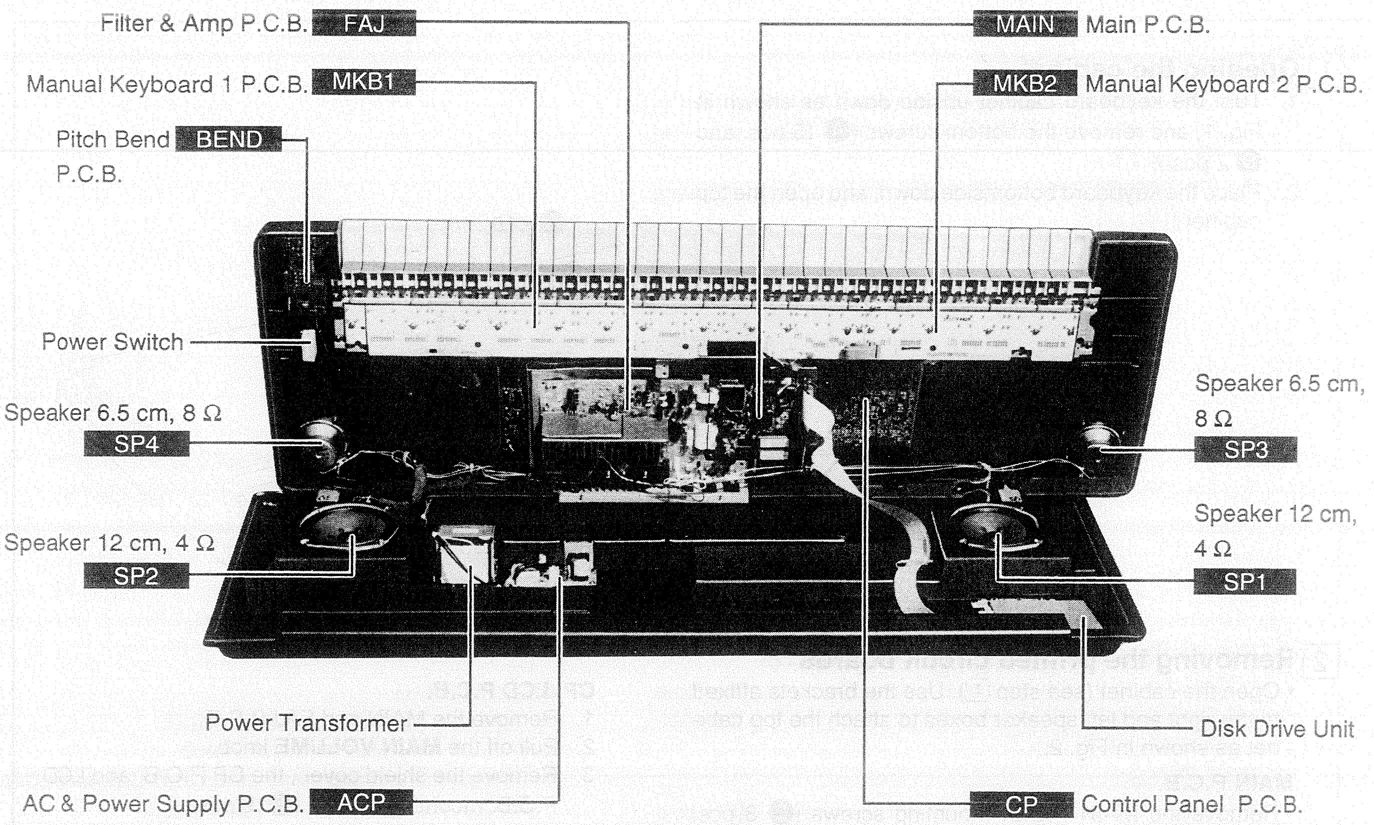
CONDUCTOR SETTINGS

The **CONDUCTOR** buttons are used to assign sounds to the keyboard in many different ways. For example, you can assign two sounds to the entire keyboard so that playing one key will produce two sounds. You can even split the keyboard into right and left sections (**SPLIT**), and assign a different sound to each section.

CONDUCTOR

CONDUCTOR settings	**How sounds are assigned to the keyboard**
	All keys produce the **RIGHT 1** sounds. **RIGHT 1**
	All keys produce the **RIGHT 2** sounds. **RIGHT 2**
	All the keys play both **RIGHT 1** and **RIGHT 2** sounds at the same time. **RIGHT 1 + RIGHT 2**
	The left keys produce the **LEFT** sound and the right keys produce the **RIGHT 1** sound and the **RIGHT 2** sound (SPLIT). **LEFT** | **RIGHT 1 + RIGHT 2**
	The left keys produce the **LEFT** sound and the right keys produce the **RIGHT 1** sound (SPLIT). **LEFT** | **RIGHT 1**
	The left keys produce the **LEFT** sound and the right keys produce the **RIGHT 2** sound (SPLIT). **LEFT** | **RIGHT 2**

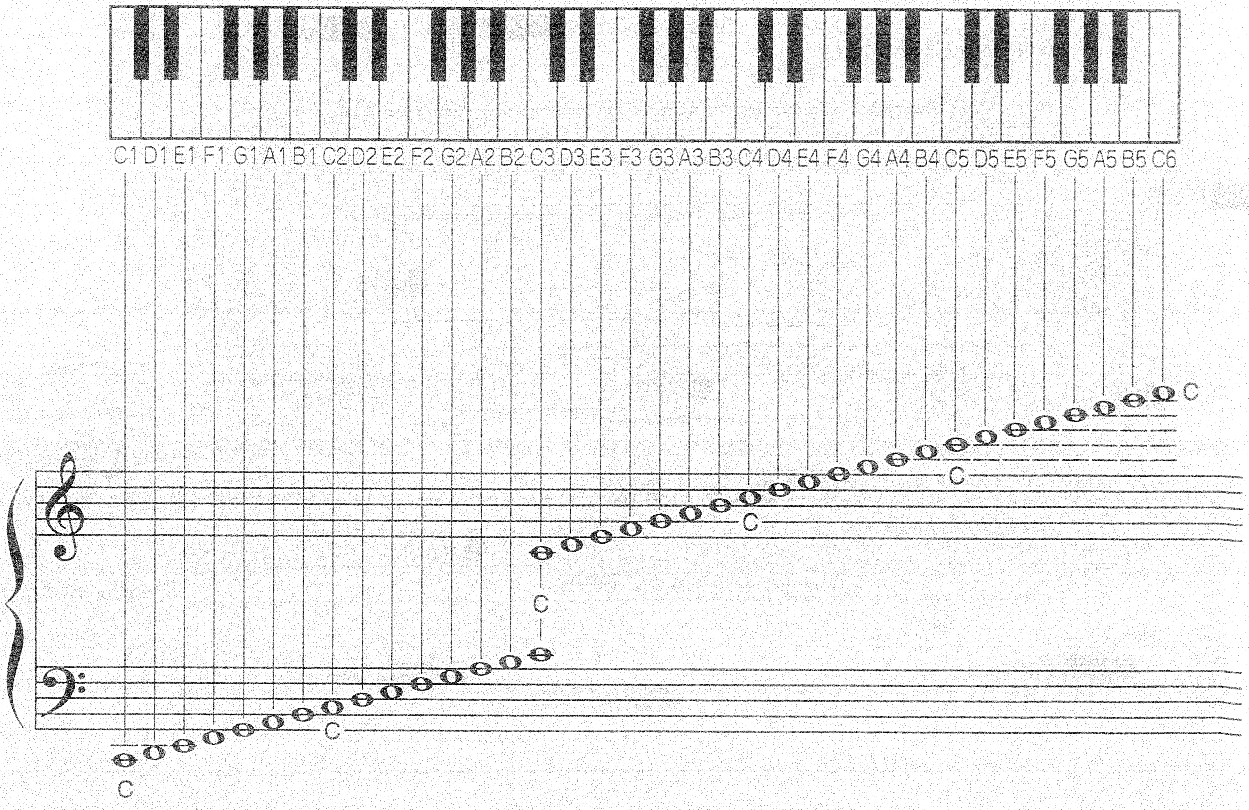
PARTS LOCATION


Filter & Amp P.C.B. FAJ
Manual Keyboard 1 P.C.B. MKB1
Pitch Bend BEND P.C.B.
Power Switch
Speaker 6.5 cm, 8 Ω SP4
Speaker 12 cm, 4 Ω SP2
Power Transformer
AC & Power Supply P.C.B. ACP
MAIN Main P.C.B.
MKB2 Manual Keyboard 2 P.C.B.
Speaker 6.5 cm, 8 Ω SP3
Speaker 12 cm, 4 Ω SP1
Disk Drive Unit
CP Control Panel P.C.B.

[Photo-1]

KEYBOARD RANGES

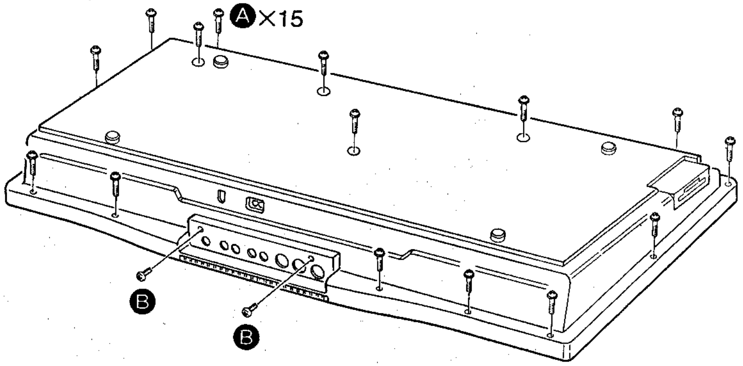
This keyboard features Touch Response, by which you control the volume by playing the keys harder or softer.


C1 D1 E1 F1 G1 A1 B1 C2 D2 E2 F2 G2 A2 B2 C3 D3 E3 F3 G3 A3 B3 C4 D4 E4 F4 G4 A4 B4 C5 D5 E5 F5 G5 A5 B5 C6
C
C
C
C
C
C

DISASSEMBLY INSTRUCTIONS

1 Opening the cabinet

1. Turn the keyboard cabinet upside down as shown in Fig. 1, and remove the bottom screws (Ⓐ 15 pcs. and Ⓑ 2 pcs.).
2. Place the keyboard bottomside down, and open the top cabinet .



[Fig. 1]

2 Removing the printed circuit boards

- Open the cabinet (see step 1). Use the brackets affixed to the right and left speaker boxes to attach the top cabinet as shown in Fig. 2.

MAIN P.C.B.

- Remove the MAIN P.C.B. mounting screws (Ⓒ 3 pcs. and Ⓓ 1 pc.).

FAJ P.C.B.

- Remove the FAJ P.C.B. mounting screws (Ⓓ 1 pc. and Ⓔ 3 pcs.).

CP, LCD P.C.B.

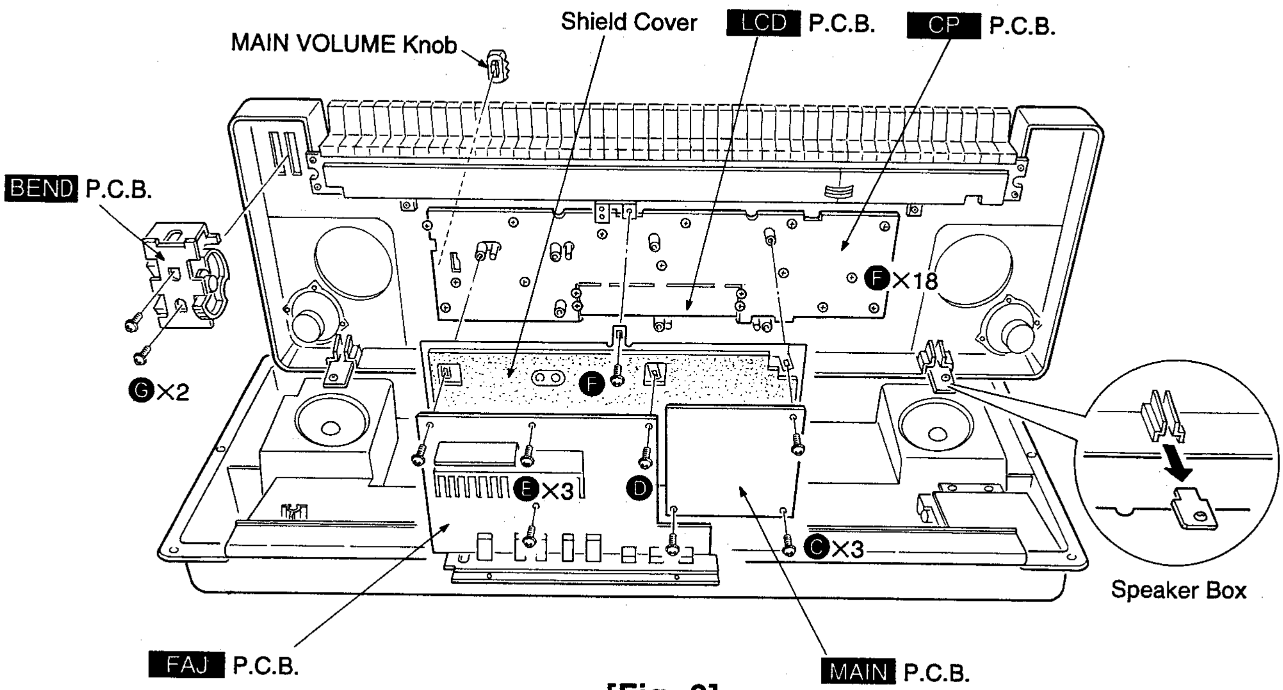
1. Remove the MAIN and FAJ P.C.B..
2. Pull off the **MAIN VOLUME** knob.
3. Remove the shield cover , the CP P.C.B. and LCD P.C.B. mounting screws (Ⓕ19 pcs.).

BEND P.C.B.

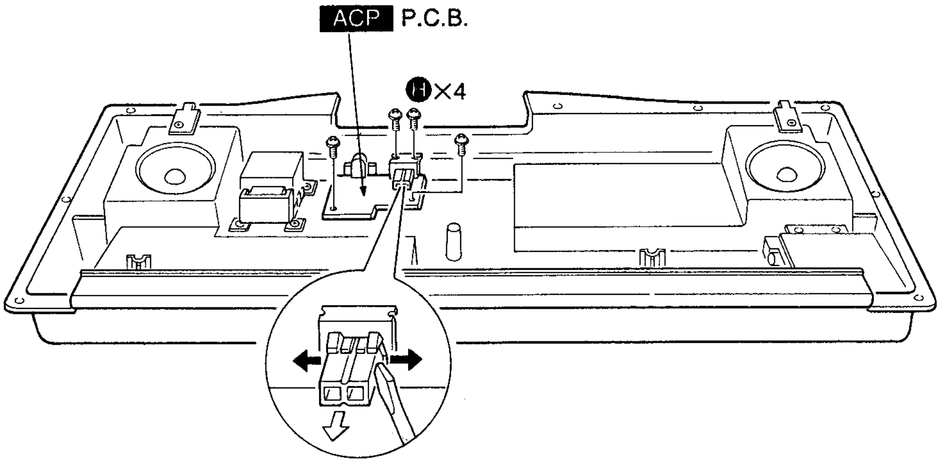
- Remove the BEND P.C.B. mounting screws (Ⓖ 2 pcs.).

ACP P.C.B.

- Remove the ACP P.C.B. mounting screws (Ⓗ 4 pcs.) as shown in Fig.3.


MAIN VOLUME Knob
Shield Cover
LCD P.C.B.
CP P.C.B.
BEND P.C.B.
Ⓖ×2
Ⓕ×18
Ⓕ
Ⓔ×3
Ⓓ
Ⓒ×3
Speaker Box
FAJ P.C.B.
MAIN P.C.B.

[Fig. 2]



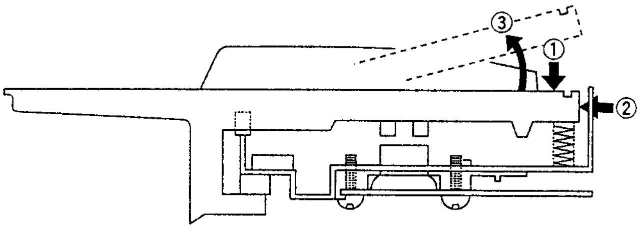
[Fig. 3]

3 Removing the keys (s)

- Open the cabinet (see step 1).

1. Remove the keyboard assembly.
2. Press downward on the rear of the key (Fig. 4-①).
3. While pressing downward on the rear of the key, push the key forward and release it from the chassis (Fig. 4-②).
4. Lift the key and remove it from the chassis (Fig. 4-③).

NOTE:
To remove a black key, the white key to either side of it should be removed first.



[Fig. 4]

SYMPTOMS WHICH APPEAR TO BE SIGNS OF TROUBLE

The following changes in performance may occur in Technics Keyboard but do not indicate trouble.

Phenomenon		Remedy
Sounds and effects	The buttons, keys, etc. malfunction.	• Turn off the **POWER** button once, then turn it on again. If this procedure is not successful, turn off the **POWER** button once. Then, while pressing the three lower number buttons in the **RHYTHM SELECT** number pad (**0**, **1** and **2**) at the same time, turn the **POWER** button on again. (Note that, in this case, all programmable settings, functions and memories return to their factory-preset status.)
	No sound is produced when the keys are pressed.	• The **MAIN VOLUME** is at the minimum setting. Adjust the volume with the **MAIN VOLUME** control. • The volumes for the selected parts are set to the minimum levels. Use the balance buttons to set the volumes of the relevant parts to appropriate levels. • The LOCAL CONTROL for a part performed on the keyboard is set to OFF. Set the LOCAL CONTROL to ON.
	Only percussive instrument sounds are produced when the keyboard is played.	• A **KEYBOARD PERC** sound (numbers **95–99**) has been selected. On the **SOUND SELECT** number pad, select a different sound number.
	The volume is very low when the keyboard is played.	• The volume setting in the **SEQUENCER** contents is very low. Follow the INITIAL procedure to reset the settings.
	Some sounds cannot be selected.	• When the GENERAL MIDI status is set to on, The sounds which can be selected and operation which can be executed are limited. Turn the GENERAL MIDI status off to return the instrument to its normal operation.
	The sound you hear is different from the sound you selected.	• This sometimes occurs when you play back **SEQUENCER** or **COMPOSER** data which was created on a different model, or when MIDI data is received from a connected instrument. Select the desired sounds again.
Rhythm	The rhythm does not start.	• The **DRUMS** volume is set to the minimum level. Use the balance buttons to set the **DRUMS** volume to an appropriate level. • In the **RHYTHM SELECT** section, a rhythm in **MEMORY A** or **MEMORY B** with no stored pattern was selected. Select a different rhythm. • A **SEQUENCER** track button is on. When you are not playing back the **SEQUENCER** performance, turn off the track buttons. • CLOCK is set to MIDI. Set CLOCK to INTERNAL. • The rhythm does not work when the GENERAL MIDI mode is set to ON. Turn the GENERAL MIDI status off to return the instrument to its normal operation.

Phenomenon		Remedy
SEQUENCER	Storage is not possible.	• The remaining memory capacity of the **SEQUENCER** is 0. Follow the SONG CLEAR or TRACK CLEAR procedure to erase the memory.
	Multi-track storage is not possible.	• The playback track has been selected, but the **START/STOP** button has not been pressed. A flashing track indicator shows the track which is ready for recording, and a lit track indicator shows a track which is ready for playback. To record one track while listening to another (playback) track, press the **START/STOP** button to begin playback.
	The playback measure indication is different from when the performance was recorded.	• The number of measures corresponds to the time signature of the rhythm selected at the start of recording. To change the rhythm in the middle of the song, record the rhythm change in the RHYTHM part.
AUTO PLAY CHORD	No sound is produced for the automatic accompaniment.	• In the **RHYTHM SELECT** section, a rhythm in **MEMORY A** or **MEMORY B** with no stored pattern was selected. Select a different rhythm.
	No sound is produced for the automatic accompaniment, or only the sounds of some parts are produced.	• An **ACCOMP** part does not sound if its corresponding volume is set to the minimum level. Use the respective balance buttons to set the **ACCOMP 1, 2** and **3** volumes to appropriate levels.
COMPOSER	Storage is not possible.	• The remaining memory capacity of the **COMPOSER** is 0.
	Setting the time signature and number of measures is not possible.	• The time signature and number of measures cannot be changed for a pattern which is currently recorded in the **COMPOSER**. If you wish to change the time signature and/or measure data, first follow the procedure to clear the memory.
	The playback timing of the rhythm pattern is different from the timing with which it was recorded.	• The QUANTIZE function was on when the pattern was recorded and the timing was automatically corrected. Set the quantize level to a smaller note unit or to OFF when recording.
Disk Drive	The Disk Drive produces a noise during recording or playback.	• This occurs when the Disk Drive is reading a disk. It does not indicate a problem.
	When the procedure to load from a disk is performed, the contents of the keyboard memory are erased.	• When performing the load operation from a disk, the keyboard memory changes to that of the data loaded from the disk. If you wish to preserve a song which is stored in the keyboard memory, save it on a disk before performing the load procedure.
Other	Noise from a radio or TV can be heard.	• This sometimes occurs when electrical equipment such as a radio or TV is used near the instrument. Try moving such electrical equipment further away from the instrument. • The sound may be coming from a nearby broadcast station or amateur radio station. If the sound is bothersome, consult your dealer or service center.
	The cabinet becomes warm during use.	• This instrument has a built-in power source that heats the cabinet to some degree. This is not an indication of trouble.

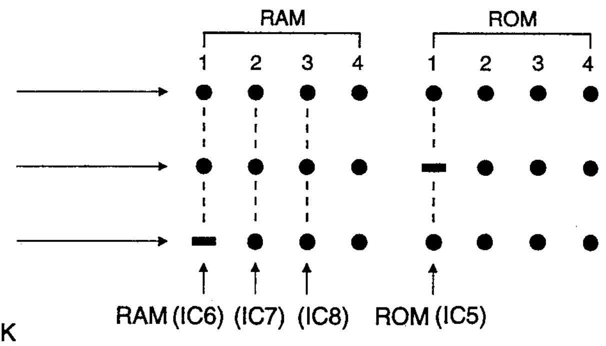
ERROR DISPLAY

No.	Contents
00	The data on the disk that you are using is for a different product.
01	An error has occurred while the disk was loading. Please try again!
02	There is no disk in the Disk Drive.
03	The file that you tried to load is empty.
05	An error has occurred while the disk was saving. Please try again!
06	The disk that you are using is write protected. Please remove the write protection and try again.
07	The disk that you are using is full. Please use another disk.
08	An error has occurred while the disk was formatting. The disk that you are using may be faulty. Please try formatting another disk.
09	The data on the disk is copy protected.
10	The data is already copy protected.
11	The password that you entered is incorrect.
20	A problem has occurred with your **SEQUENCER** Data. This might be due to a damaged or faulty disk.
21	Memory full
22	It is necessary to press PUNCH OUT to complete this procedure.
23	It is impossible to change the time signature because it has already been set in the existing tracks.
24	A rhythm track already exists. It is impossible to assign two tracks to rhythm.
25	It is only possible to change the velocity on a melody track.
26	It is only possible to merge melody tracks. Tracks such as rhythm, chord and control cannot be merged.

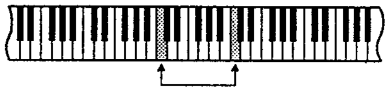
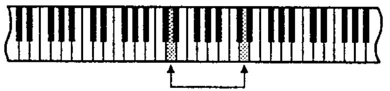
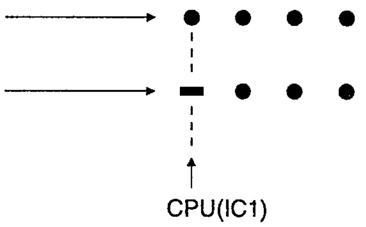
No.	Contents
27	It is only possible to copy melody tracks. Tracks such as rhythm, chord and control cannot be copied.
28	This song is too long to be saved as a MIDI file.
29	The MIDI file that you have tried to load exceeds the memory capacity of the KN1200 and cannot be played. The **SEQUENCER** memory has been cleared.
30	It is not possible to change the time signature or measure length of a **COMPOSER** pattern after it has been recorded. If you want to proceed, you must first clear the entire **COMPOSER** pattern.
31	The time signature of the pattern from which you are copying is different from the **COMPOSER** memory that you are using. Either: Change the time signature of the **COMPOSER** memory or: Copy from a pattern that has the same time signature
32	Memory full
40	The Identification (ID) code of the system exclusive data received by the KN1200 is for a different product.
41	An error has occurred during system exclusive data reception. The data from the transmitting device may be incomplete. Please try again.
42	An error has occurred during system exclusive transmission. The data has not been received correctly. Please try again.
43	The file that you are trying to load was saved on a previous KN keyboard. It is only possible to load using the "ALL" option.
44	It is impossible to edit a Drum Kit. Please select a different sound from any group except Keyboard Percussion.
45	Incompatible disk format.
46	It is only possible to insert melody tracks.
47	Please select a preset pattern (**00–99**).

ABOUT THE SELF-DIAGNOSTIC FUNCTION

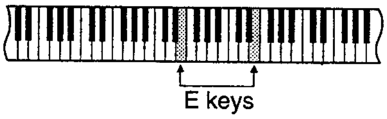
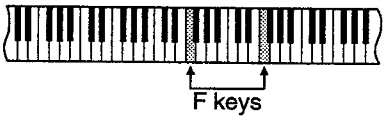
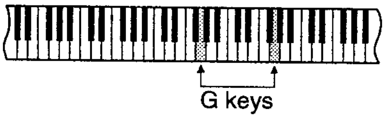
This model has some self-diagnostic capabilities. When set to the self-diagnostic mode, operation of various components can be verified by following the procedures in the chart below.

<table>
<tr><th>No.</th><th>PCB</th><th>TEST MODE</th><th>Procedure</th></tr>
<tr><td rowspan="2">1</td><td rowspan="2">MAIN</td><td>RAM (IC6,7,8), ROM (IC5) check</td><td>1. Connect the CHECKING DEVICE (refer to page I-13) to CN8 on the MAIN P.C.B., and turn on the CHECKING DEVICE switch.
2. Turn on the power switch.</td></tr>
<tr><td colspan="2">When the power switch is turned on, the LED of the CHECKING DEVICE flashes 8 times. The first 4 flashes are for the RAM check, and the latter 4 flashes are for the ROM check. The order of the LED flashes correspond to the respective IC number as shown below. If an IC is defective, the corresponding flash time is longer.
Examples
1. RAM OK, ROM OK
2. RAM OK, ROM (IC5) defective
3. RAM (IC6) defective, ROM OK


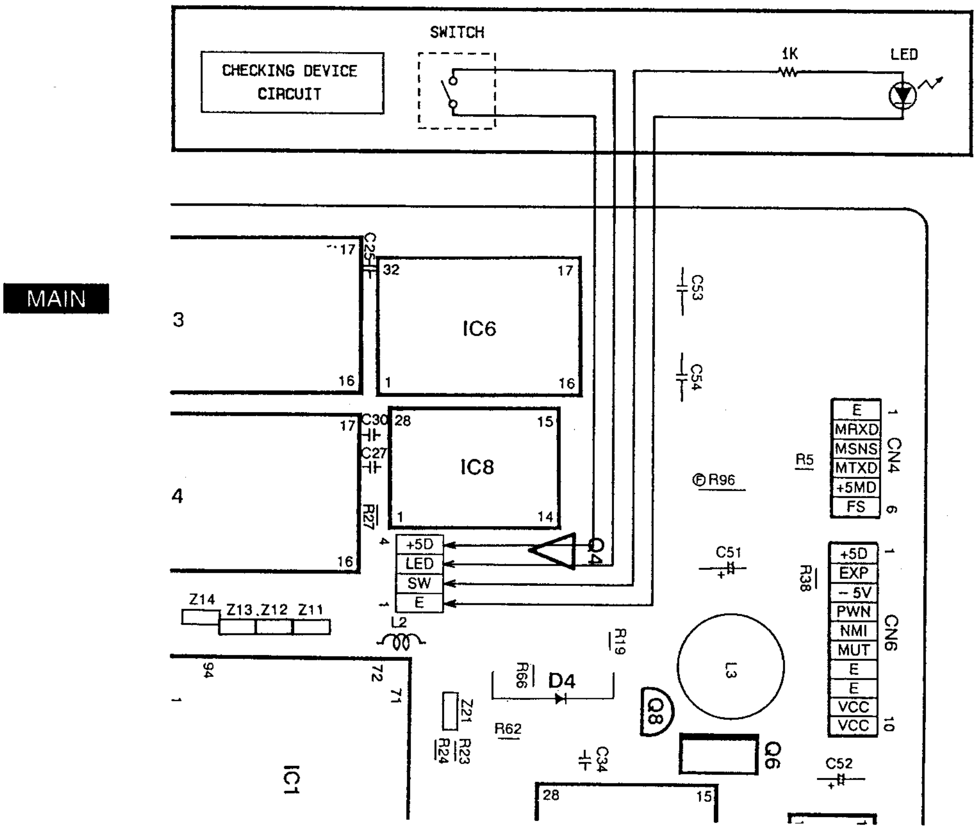
RAM
ROM
1
2
3
4
1
2
3
4
RAM (IC6)
(IC7)
(IC8)
ROM (IC5)

NOTE : ● indicates short flash time = OK
▬ indicates long flash time = Defective</td></tr>
<tr><td rowspan="2">2</td><td rowspan="2">MAIN</td><td>Gate array (IC2) check</td><td>Press and hold the two C keys shown below, and then turn on the power switch.

 </td></tr>
<tr><td colspan="2">The contrast of the LCD (Musical Display) on the control panel change in 8 stages. If the contrast dose not change, the gate array (IC2) is defective.</td></tr>
<tr><td rowspan="2">3</td><td rowspan="2">CP</td><td>CPU (IC1) check</td><td>1. Connect the CHECKING DEVICE to CN8 on the MAIN P.C.B. (The Checking Device switch should be off).
2. Press and hold the two D keys shown below, and then turn on the power switch.

 </td></tr>
<tr><td colspan="2">When the power switch is turned on, the LED of the CHECKING DEVICE flashes. The LED flashes 4 times, the first flash corresponding to the IC1 check. If IC1 is defective, the first flash will be longer.
1. IC1 OK
2. IC1 defective


NOTE : ● indicates short flash time = OK
▬ indicates long flash time = Defective</td></tr>
</table>

<table>
<tr><th>No.</th><th>PCB</th><th>TEST MODE</th><th>Procedure</th></tr>
<tr><td rowspan="2">4</td><td rowspan="2">MAIN</td><td>Wave ROM (IC16, 17) check</td><td>Press and hold the two E keys shown below, and then turn on the power switch.

 </td></tr>
<tr><td colspan="2">When set to the self-diagnostic mode, the Wave ROM outputs a sine wave. If no sound is produced, or if the sound is distorted, the Wave ROM is defective.</td></tr>
<tr><td rowspan="2">5</td><td rowspan="2">CP</td><td>Control panel LED check</td><td>Press and hold the two F keys shown below, and then turn on the power switch.

 </td></tr>
<tr><td colspan="2">Press the buttons on the control panel and confirm that the corresponding LEDs light.</td></tr>
<tr><td rowspan="2">6</td><td rowspan="2">CP</td><td>LCD display check</td><td>Press and hold the two G keys shown below, and then turn on the power switch.

 </td></tr>
<tr><td colspan="2">When set to the self-diagnostic mode, the test pattern is shown on the display. Monitor the display to confirm that the characters appear correctly.</td></tr>
</table>

■ Connection between serving CHECKING DEVICE and MAIN PCB


SWITCH
CHECKING DEVICE CIRCUIT
1K
LED
MAIN
IC6
IC8
IC1
+5D
LED
SW
E
Q4
C53
C54
R96
R5
C51
R38
L3
Q8
Q6
D4
R66
R19
R62
C34
C52
R23
R24
Z21
L2
Z14
Z13
Z12
Z11
C25
C30
C27
R27
CN4
E
MRXD
MSNS
MTXD
+5MD
FS
CN6
+5D
EXP
-5V
PWN
NMI
MUT
E
E
VCC
VCC

MIDI IMPLEMENTATION CHART

Keyboard [SX-KN1200] **(Transmitted)**

Function		RIGHT1,2,LEFT, PART4～15	PART16	ACMP1	ACMP2,3	BASS	DRUMS	CHORD	CONTROL	Remarks
Basic Channel	Default	1-16	1-16	1-16	1-16	1-16	1-16	1-16	1-16	memorized
	Changed	1-16	1-16	1-16	1-16	1-16	1-16	1-16	1-16	
Mode	Default	3	3	3	3	3	3	3	3	OMNI OFF,POLY MODE
	Messages	×	×	×	×	×	×	×	×	
	Altered	–	–	–	–	–	–	–	–	
Note Number		0-119	0-119	0-119	0-119	0-119	0-119	0-119	–	Changes depending on the position of the transpose control,octave shift,and drums type.
	True voice	–	–	–	–	–	–	–	–	
Velocity	Note ON	○	○	○	○	○	○	○	–	
	Note OFF	×	×	×	×	×	×	×	–	
After Touch	Key's	×	×	×	×	×	×	×	–	
	Ch's	×	×	×	×	×	×	×	–	
Pitch Bend		○×*	×	○×*	○×*	○×*	×	○×*	×	
Control Change	0,32	○×*	○×*	○×*	○×*	○×*	○×*	○×*	×	bank select MSB, LSB
	1	○×*	×	○×*	○×*	○×*	×	○×*	×	modulation
	6,38	○×*	×	×	×	×	×	×	×	data entry MSB, LSB
	7	○×*	○×*	○×*	○×*	○×*	○×*	○×*	×	volume
	10	○×*	×	×	×	×	×	×	×	panpot
	11	○×*	○×*	×	×	×	×	×	○×*	expression
	64	○×*	○×*	○×*	○×*	○×*	○×*	×	×	sustain
	80	×	×	○×*	×	×	×	×	×	auto play chord
	82	×	×	×	×	×	○×*	×	×	intro, fill in, ending
	91	○×*	○×*	○×*	○×*	○×*	○×*	○×*	○×*	reverb
	93	○×*	×	○×*	○×*	○×*	×	○×*	×	digital effect
	100,101	○×*	×	×	×	×	×	×	×	RPN LSB, MSB
	120	○	○	×	×	×	×	×	×	all sound off
	121	○×*	○×*	○×*	○×*	○×*	○×*	○×*	×	reset all cotrollers
Prog Change		○×*	○×*	○×*	○×*	○×*	○×*	○×*	×	Changes depending on program change mode and prog.cng to p.mem.
	True #	–	–	–	–	–	–	–	–	
System exclusive		○								
System common	Song Pos	○×*								
	Song Sel	○×* (0-19)								
	Tune	×								
System Real Time	Clock	○								
	Commands	○×*								start/stop,continue
Aux Messages	Local ON/ OFF	×	×	×	×	×	×	×	–	
	All notes OFF	×	×	×	×	×	×	×	–	
	Active Sense	○								
	Reset	×								
Notes		○×*…………Whether or not the data for each of these items is transmitted can be set.								

Mode 1: OMNI ON, POLY　Mode 2: OMNI ON, MONO　○:Yes
Mode 3: OMNI OFF, POLY　Mode 4: OMNI OFF, MONO　×:No

Keyboard [SX-KN1200] **(Recognized)**

Function		RIGHT1,2,LEFT, PART4～15	PART16	ACMP1	ACMP2,3	BASS	DRUMS	CHORD	CONTROL	Remarks
Basic Channel	Default	1-16	1-16	1-16	1-16	1-16	1-16	1-16	1-16	memorized
	Changed	1-16	1-16	1-16	1-16	1-16	1-16	1-16	1-16	
Mode	Default	3	3	3	3	3	3	3	3	OMNI OFF,POLY MODE
	Messages	×	×	×	×	×	×	×	×	
	Altered	–	–	–	–	–	–	–	–	
Note Number		0-127	0-127	0-127	0-127	0-127	0-127	0-127	–	Changes depending on the position of the transpose control,octave shift, and drums type.
	True voice	0-127	0-127	0-127	0-127	0-127	0-127	0-127	–	
Velocity	Note ON	○	○	○	○	○	○	○	–	
	Note OFF	×	×	×	×	×	×	×	–	
After Touch	Key's	×	×	×	×	×	×	×	–	
	Ch's	×	×	×	×	×	×	×	–	
Pitch Bend		○×*	×	○×*	○×*	○×*	×	○×*	×	
Control Change	0,32	○×*	○×*	○×*	○×*	○×*	○×*	○×*	×	bank select MSB, LSB
	1	○×*	×	○×*	○×*	○×*	×	○×*	×	modulation
	6,38	○×*	×	×	×	×	×	×	×	data entry MSB, LSB
	7	○×*	○×*	○×*	○×*	○×*	○×*	○×*	×	volume
	10	○×*	×	×	×	×	×	×	×	panpot
	11	○×*	○×*	×	×	×	×	×	○×*	expression
	64	○×*	○×*	○×*	○×*	○×*	○×*	×	×	sustain
	80	×	×	○×*	×	×	×	×	×	auto play chord
	82	×	×	×	×	×	○×*	×	×	intro, fill in, ending
	91	○×*	○×*	○×*	○×*	○×*	○×*	○×*	○×*	reverb
	93	○×*	×	○×*	○×*	○×*	×	○×*	×	digital effect
	100,101	○×*	×	×	×	×	×	×	×	RPN LSB, MSB
	120	○	○	○	○	○	○	○	×	all sound off
	121	○×*	○×*	○×*	○×*	○×*	○×*	○×*	×	reset all cotrollers
Prog Change		○×*	○×*	○×*	○×*	○×*	○×*	○×*	×	Changes depending on program change mode and prog.cng to p.mem.
	True #	0-127	0-127	0-127	0-127	0-127	0-127	0-127	–	
System exclusive		○								
System common	Song Pos	○×*								
	Song Sel	○×* (0-19)								
	Tune	×								
System Real Time	Clock	○								
	Commands	○×*								start/stop,continue
Aux Messages	Local ON/ OFF	×	×	×	×	×	×	×	–	
	All notes OFF	○	○	○	○	○	○	○	–	
	Active Sense	○								
	Reset	×								
Notes		○×*…………Whether or not the data for each of these items is received can be set.								

Mode 1: OMNI ON, POLY Mode 2: OMNI ON, MONO ○:Yes

Mode 3: OMNI OFF, POLY Mode 4: OMNI OFF, MONO ×:No

PRECAUTIONS BEFORE SERVICING

Precautions for measuring of the output waveforms.

1. The waveform was measured with a "National Digital Storage Oscilloscope VP-5730A". Therefore the waveforms of musical tone signals shown may differ somewhat due to the difference in the timing of triggering.
2. Since the 1/10 test probe is used, the indicated voltage value on the bottom part of each waveform photo is 1/10 of the actual value (e.g. 0.2 V/cm should be 2.0 V/cm).
3. To measure the waveforms, first set this unit to the self-diagnostic mode (refer to page I-13, No. 4). The Wave ROM output will then be output as a sine wave to facilitate the servicing check.

Important safety notice:

Components identified by a ⚠ mark have special characteristics impotant for safety.
When replacing any of these components, use only manufacture's specified parts.

Symbolic Marks

The symbolic marks for resistors and capacitors which used in this circuits are classified as following TABLE-1 and TABLE-2.

1. RESISTORS
   - Resistors without symbolic mark are FIXED CARBON FILM RESISTORS (ERD-type).
   - All resistors are 1/4 WATT, ±5 % TOLERANCE unless otherwise designated in schematic diagrams.

(TABLE-1)

SYMBOL	SPECIFICATION	SYMBOL	SPECIFICATION
Ⓕ	Fixed Carbon Film Resistors " FLAME-PROOF " (ERD—F—type)	Ⓕ	Fixed Metal Film Resistors " FLAME-PROOF " (ERX—type)
Ⓕ	Fixed Wire Wound Resistors " FLAME-PROOF " (ERF—type)	🄵	Fuse Type Fixed Metal Oxide Film Resistors " FLAME-PROOF " (ERQ—type)
Ⓕ	Fixed Metal Oxide Film Resistors " FLAME-PROOF " (ERG—type)	🄵	Fuse Type Fixed Carbon Film Resistors " FLAME-PROOF " (ERD2FC—type)
Ⓖ	Fixed Metal Film Resistors (Precision and High Stability) (ERO—type)		

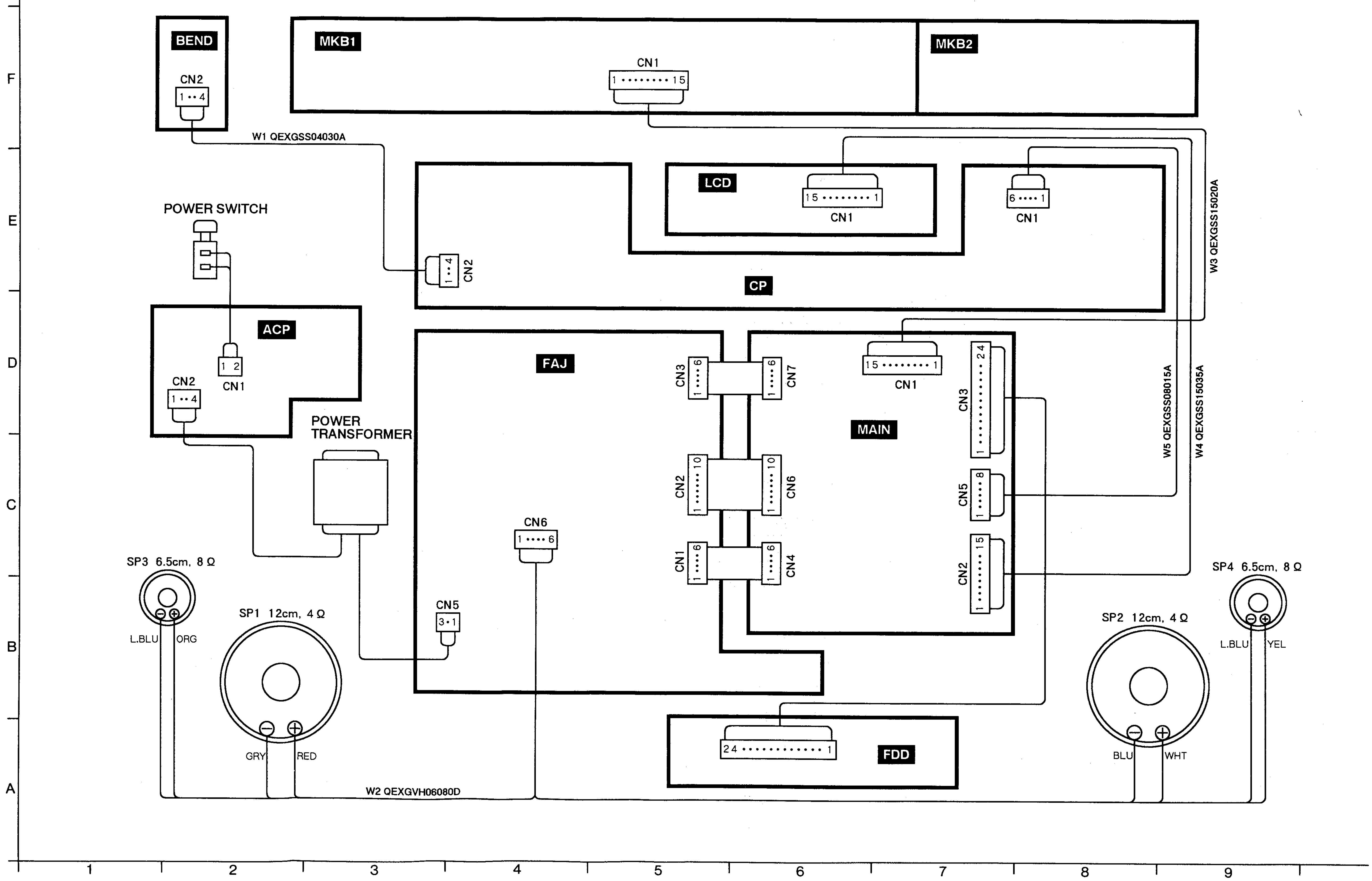
2. CAPACITORS
   - Capacitors without symbolic mark are POLYESTER CAPACITORS. (ECQM-type, ECQG-type, ±10 % Tolerance)
   - Polarized capacitors without symbolic mark are Aluminum Electrolytic Capapcitors. (ECEA-type, ±20 % Tolerance)

(TABLE-2)

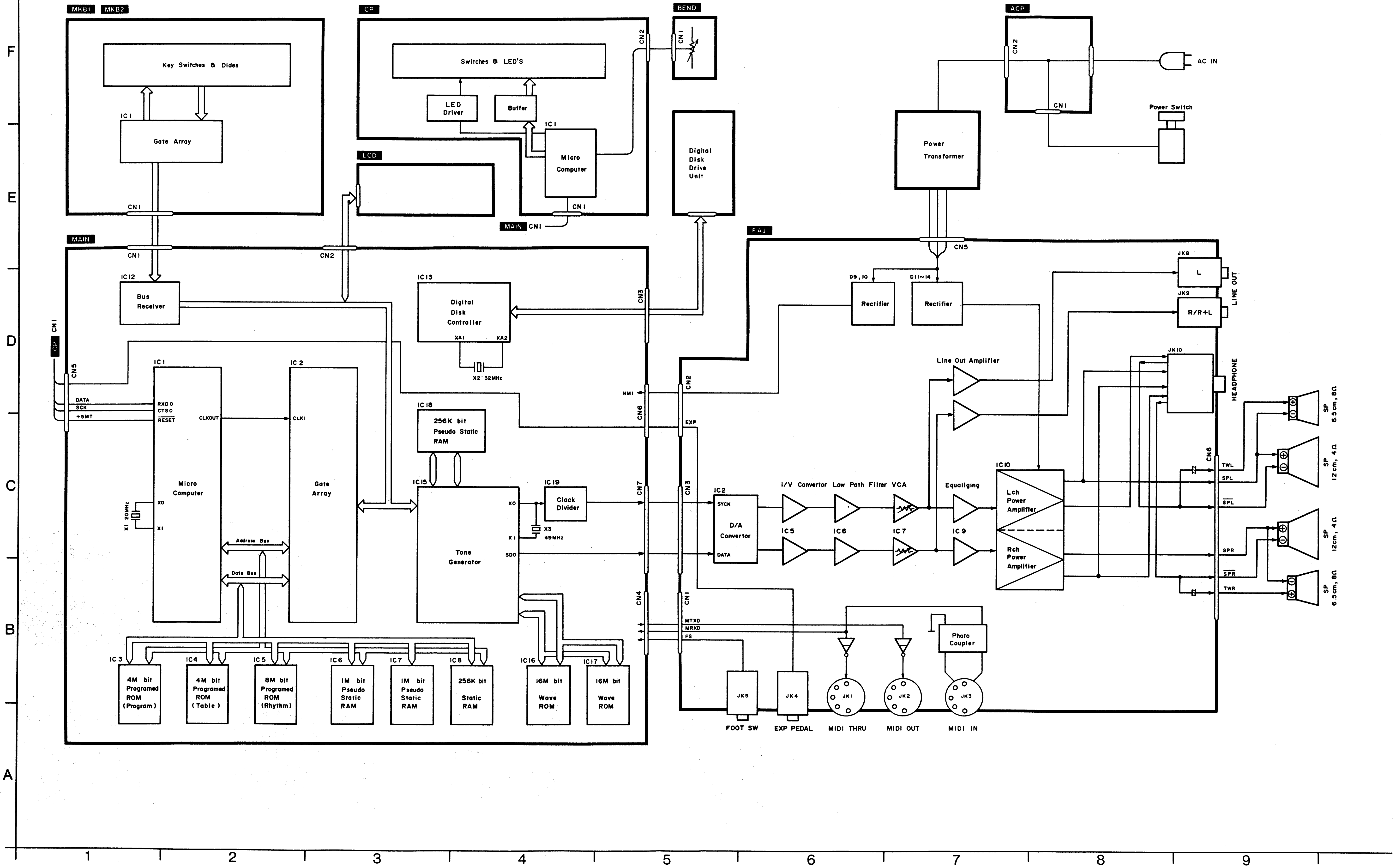
SYMBOL	SPECIFICATION	TYPE
Ⓝ	Non-Polarized Electrolytic Capacitors	ECEA_KN_type
Ⓨ	Non-Polarized Electrolytic (for Network System)	ECEA_Y_type
Ⓣ	Tantalum Solid Electrolytic Capacitors	ECS_type
(TF)	Metalized Plastic Film Capacitors (TF Series)	ECQV_type
○	Temperature Compensating Ceramic Capacitors	ECC_type
	High-Dielectric Constant Ceramic Capacitors	ECK_type ECR_type
	Axial Lead Ceramic Capacitors	ECB_type
	Metalized Polyester Film Capacitors for Across the Line	ECQ_EW_type
	Aluminum Electrolytic Capacitors for Smoothing Circuit	ECES_type
	Multilayer Ceramic Chip Capacitors	ECUV_type

MEMO

WIRING CONNECTION Diagram


BEND
CN2
1 •• 4
MKB1
CN1
1 ••••••••• 15
MKB2
W1 QEXGSS04030A
LCD
15 ••••••••• 1
CN1
6 •••• 1
CN1
W3 QEXGSS15020A
POWER SWITCH
CN2
1 •• 4
CP
ACP
1 2
CN1
CN2
1 •• 4
FAJ
CN3
CN7
15 ••••••••• 1
CN1
24
CN3
MAIN
W5 QEXGSS08015A
W4 QEXGSS15035A
POWER
TRANSFORMER
CN2
10
CN6
CN5
8
CN6
1 •••• 6
CN1
CN4
CN2
15
SP3 6.5cm, 8 Ω
SP4 6.5cm, 8 Ω
SP1 12cm, 4 Ω
CN5
3 • 1
L.BLU
ORG
SP2 12cm, 4 Ω
L.BLU
YEL
24 •••••••••••••• 1
FDD
GRY
RED
BLU
WHT
W2 QEXGVH06080D
F
E
D
C
B
A
1
2
3
4
5
6
7
8
9

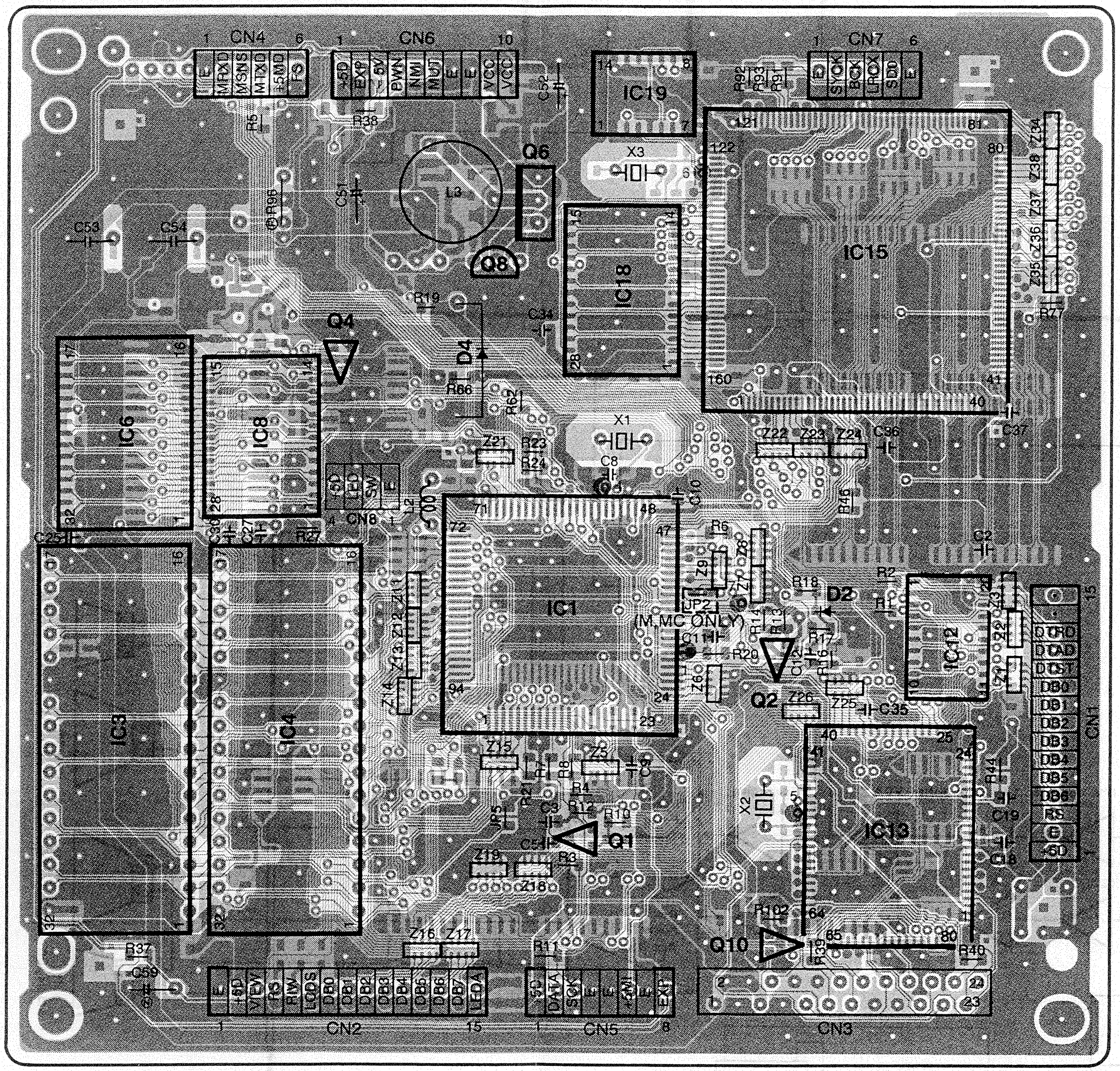
BLOCK Diagram


MKB1
MKB2
Key Switches & Dides
IC1
Gate Array
CN1
CP
Switches & LED'S
LED Driver
Buffer
IC1
Micro Computer
CN1
CN2
MAIN CN1
LCD
BEND
CN1
Digital Disk Drive Unit
ACP
CN2
CN1
AC IN
Power Switch
Power Transformer
MAIN
CN1
CN2
IC12
Bus Receiver
IC13
Digital Disk Controller
XA1
XA2
X2 32MHz
CN3
CP CN1
CN5
DATA
SCK
+5MT
IC1
RXD0
CTS0
RESET
CLKOUT
Micro Computer
X1 20MHz
XO
XI
IC2
CLKI
Gate Array
Address Bus
Data Bus
IC18
256K bit Pseudo Static RAM
IC15
Tone Generator
XO
XI
SDO
IC19
Clock Divider
X3 49MHz
NMI
CN6
CN7
CN4
IC3
4M bit Programed ROM (Program)
IC4
4M bit Programed ROM (Table)
IC5
8M bit Programed ROM (Rhythm)
IC6
1M bit Pseudo Static RAM
IC7
1M bit Pseudo Static RAM
IC8
256K bit Static RAM
IC16
16M bit Wave ROM
IC17
16M bit Wave ROM
FAJ
CN5
D9, 10
D11~14
Rectifier
Rectifier
JK8
L
JK9
R/R+L
LINE OUT
JK10
HEADPHONE
Line Out Amplifier
CN2
EXP
CN3
IC2
SYCK
D/A Convertor
DATA
I/V Convertor
Low Path Filter
VCA
IC5
IC6
IC7
Equaliging
IC9
IC10
Lch Power Amplifier
Rch Power Amplifier
CN6
TWL
SPL
SPL
SPR
SPR
TWR
SP 6.5cm, 8Ω
SP 12cm, 4Ω
SP 12cm, 4Ω
SP 6.5cm, 8Ω
CN1
MTXD
MRXD
FS
Photo Coupler
JK5
JK4
JK1
JK2
JK3
FOOT SW
EXP PEDAL
MIDI THRU
MIDI OUT
MIDI IN
F
E
D
C
B
A
1
2
3
4
5
6
7
8
9

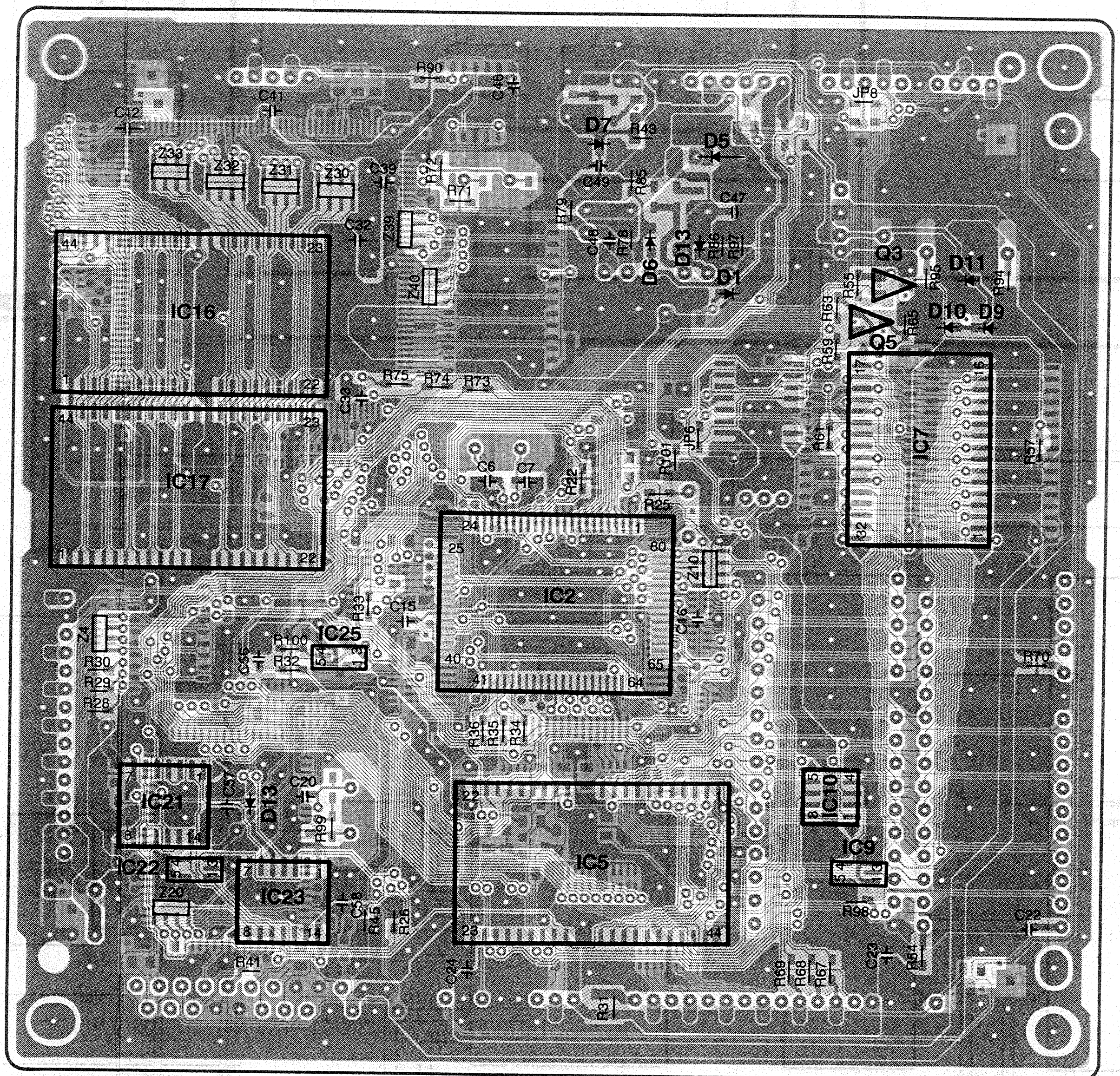
MAIN P.C. Board

M **XM** (SXPG219331)
Others (SXPG219311)

MAIN (COMPONENT SIDE)


CN4
CN6
CN7
IC19
Q6
X3
L3
IC18
IC15
Q8
Q4
IC6
IC8
D4
X1
CN8
IC1
(M, MC ONLY)
D2
Q2
IC12
IC3
IC4
Q1
X2
IC13
Q10
CN1
CN2
CN5
CN3

MAIN (FOIL SIDE)


D7
D5
D13
D6
D1
Q3
D11
D10
D9
Q5
IC16
IC17
IC7
IC2
IC25
IC21
IC22
IC23
D13
IC5
IC10
IC9

MAIN

NOTES:

- IC'S

IC1:	D70325GJ-10
IC2:	D65012GF-A79
IC3:	QSIGCKN12AX
IC4:	QSIGCKN12BX
IC5:	QSIG03C08048
IC6, 7:	T518129AFWL8
IC8:	M5256BFP85LL
IC9:	TC7SU04F
IC10:	TC7W32F
IC12:	D74HC244GS
IC13:	D72068GF-3B9
IC15:	D93083GDLBD
IC16:	QSIGH3C16CN6
IC17:	QSIGH3C16CN7
IC18:	HM65256BLF10
IC19:	D74HC74GS
IC21:	TC40H000F
IC22:	TC7S86F
IC23:	TC40H004F
IC25:	TC7S14F

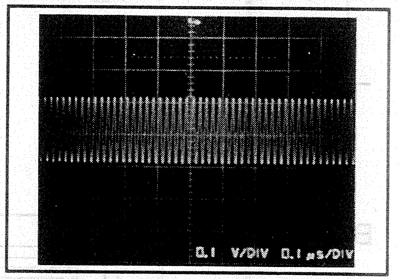
- TRANSISTORS

Q1, 4:	2SD601AQ
Q2, 10:	2SB709AR
Q3, 5:	2SD601AQ
Q6:	2SA1643
Q8:	2SC1815GR

- DIODES

D1, 2, 6, 11, 13:	MA110
D3:	MA732
D4:	MA2062LF
D5:	MA738
D7:	MA8051
D9, 10:	MA151WK
D13:	MA110

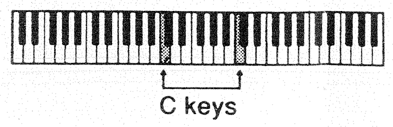
❻



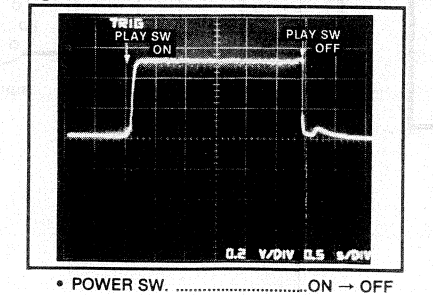
■ Measuring Conditions

Check Point ❶~❼
Set to the self-diagnostic mode followings.

- While pressing two C keys simultaneously, turn on the power switch.

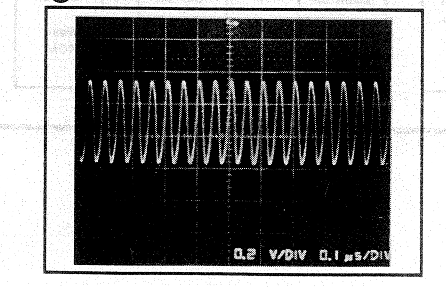


❶ NMI

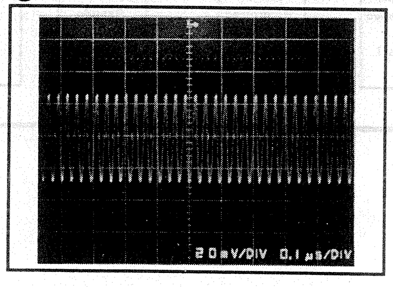


- POWER SW. ....ON → OFF

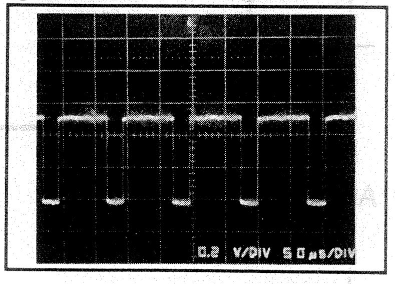
❹



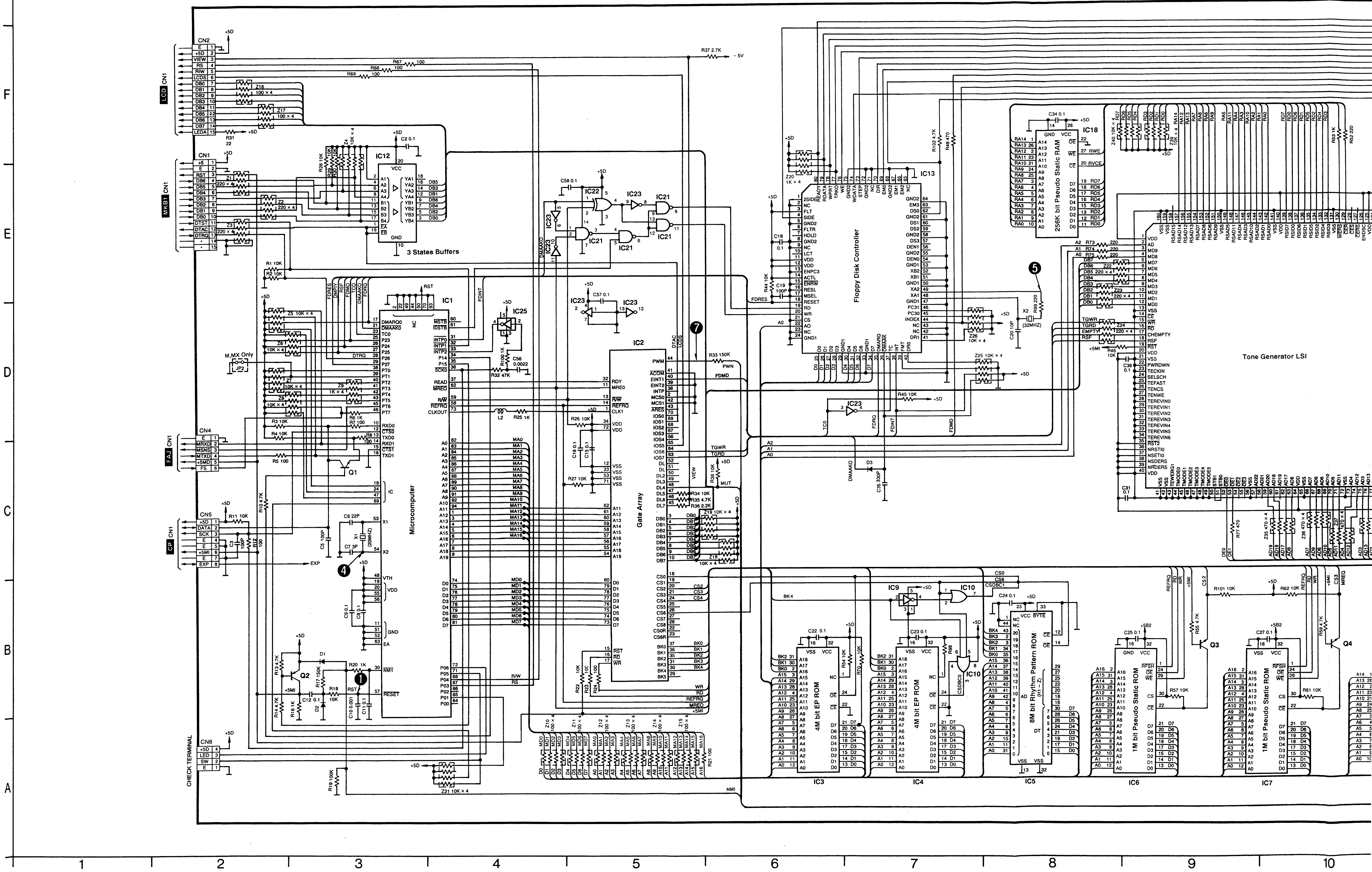
❺



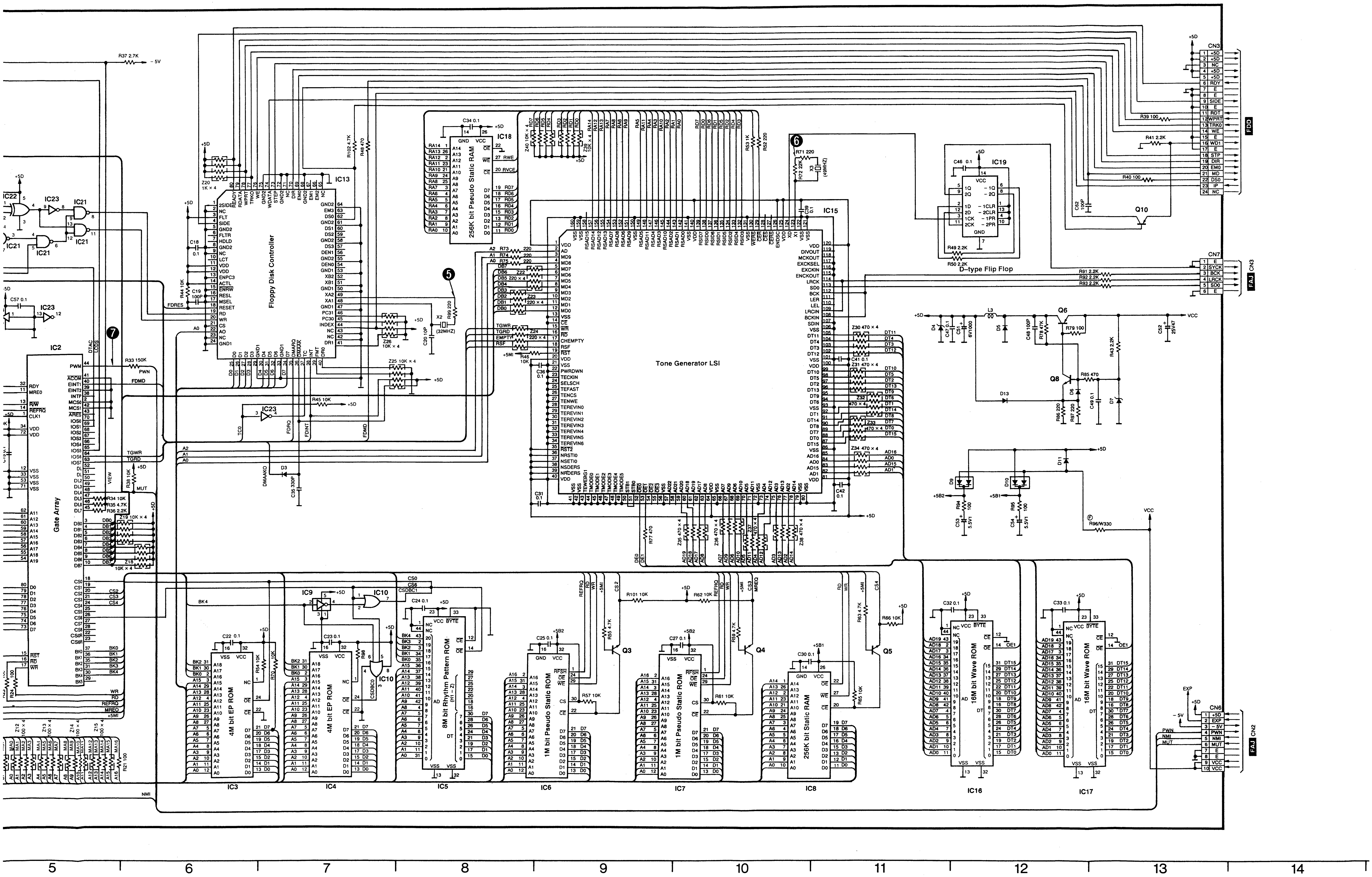
❼



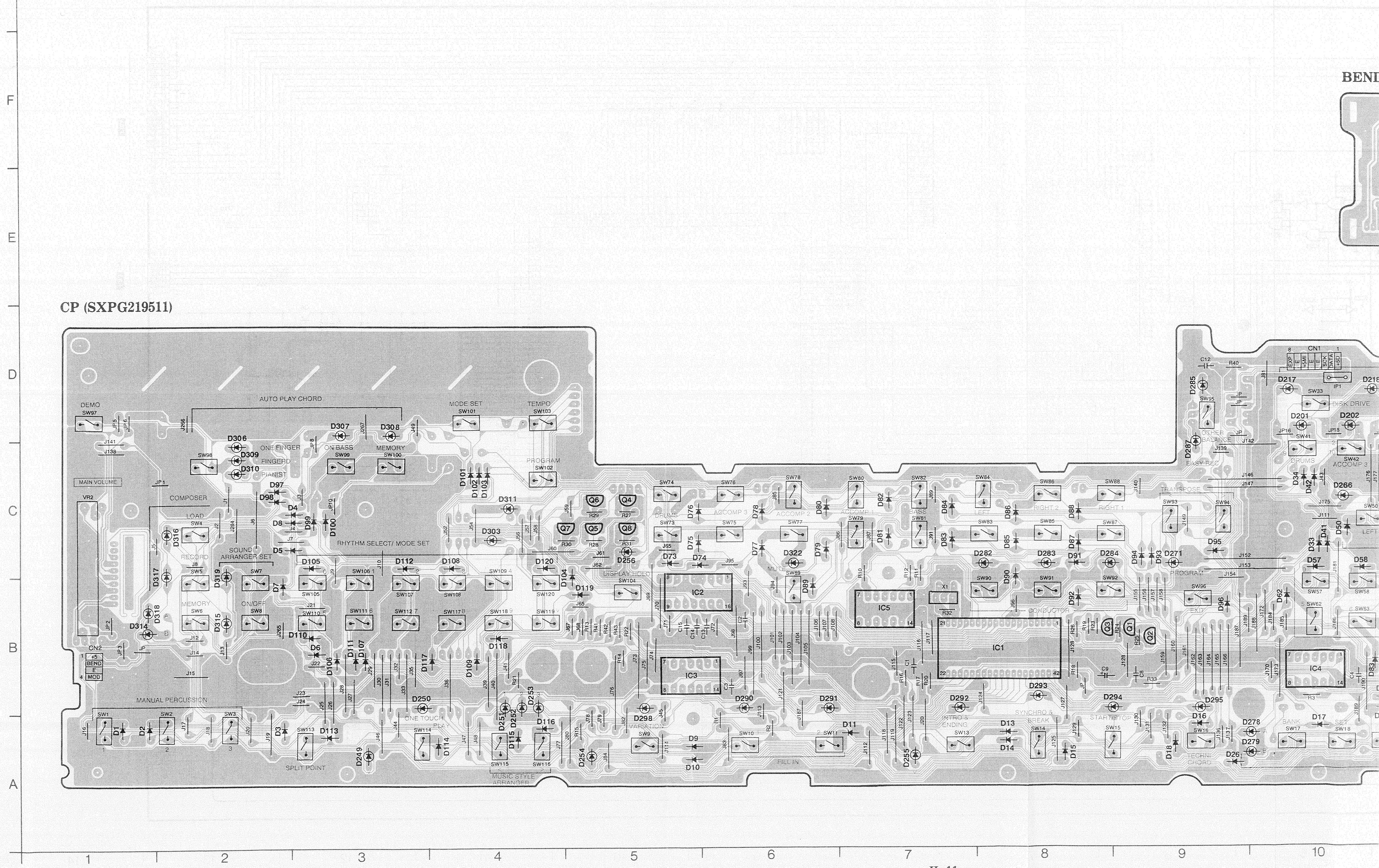
MAIN P.C. Diagram



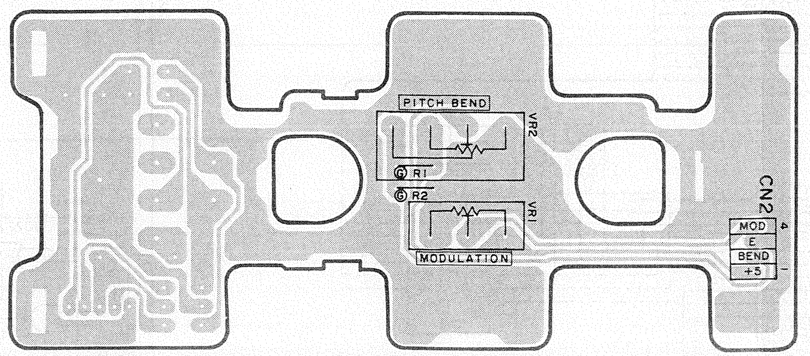
LCD CN1
MKB1 CN1
FAJ CN1
CP CN1
CHECK TERMINAL
CN2
CN1
CN4
CN5
CN8
M,MX Only
JP2
IC1
Microcomputer
IC2
Gate Array
IC12
3 States Buffers
IC13
Floppy Disk Controller
IC18
256K bit Pseudo Static RAM
Tone Generator LSI
IC3
4M bit EP ROM
IC4
4M bit EP ROM
IC5
8M bit Rhythm Pattern ROM
IC6
1M bit Pseudo Static ROM
IC7
1M bit Pseudo Static ROM
IC9
IC10
IC21
IC22
IC23
IC25
Q1
Q2
Q3
Q4
X1
X2
(32MHZ)
F
E
D
C
B
A
1
2
3
4
5
6
7
8
9
10

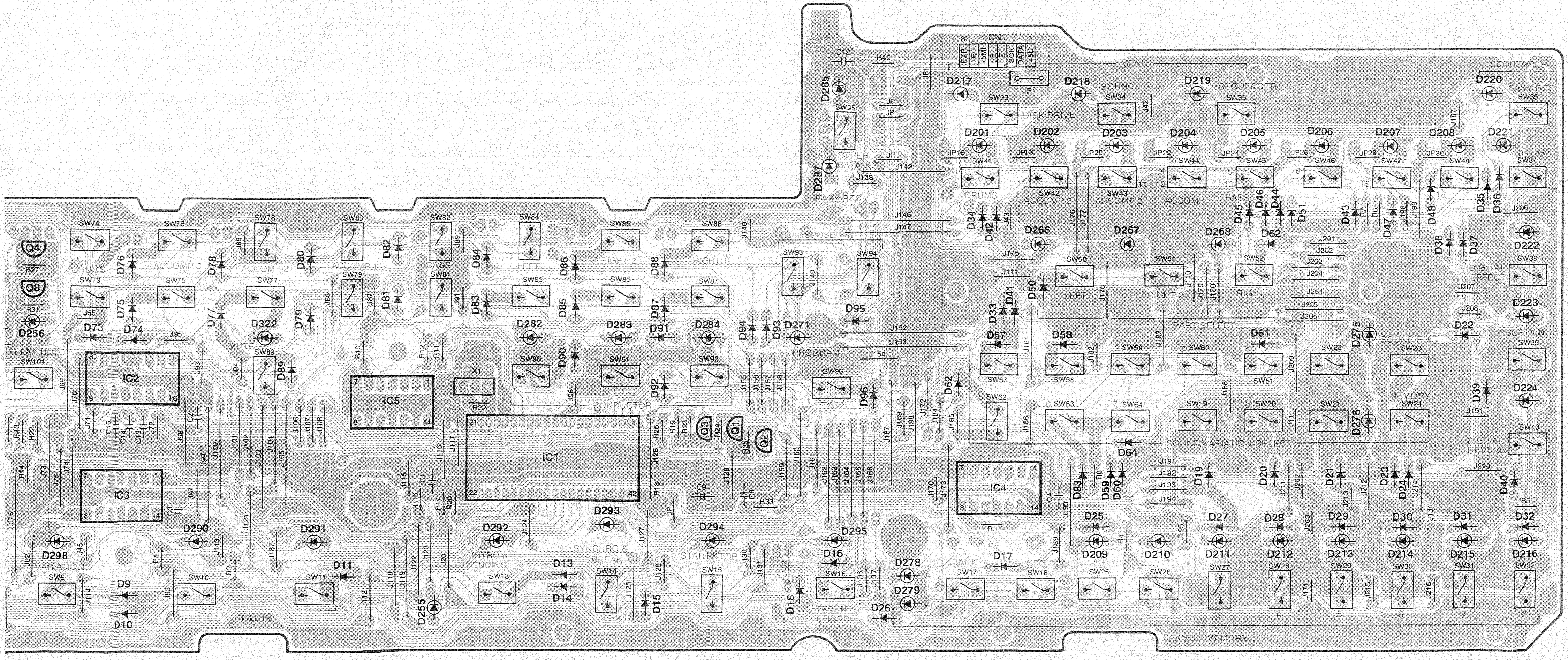

IC2
Gate Array
IC13
Floppy Disk Controller
IC18
256K bit Pseudo Static RAM
IC15
Tone Generator LSI
IC19
D-type Flip Flop
IC3
4M bit EP ROM
IC4
4M bit EP ROM
IC5
8M bit Rhythm Pattern ROM
IC6
1M bit Pseudo Static ROM
IC7
1M bit Pseudo Static ROM
IC8
256K bit Static RAM
IC16
16M bit Wave ROM
IC17
16M bit Wave ROM
IC9
IC10
IC21
IC22
IC23
Q3
Q4
Q5
Q6
Q8
Q10
X2 (32MHZ)
X3 (49MHZ)
CN3
FDD
CN7
FAJ CN3
CN6
FAJ CN2
5
6
7
8
9
10
11
12
13
14

CP/BEND P.C. Board


CP (SXPG219511)
BEND
F
E
D
C
B
A
1
2
3
4
5
6
7
8
9
10
AUTO PLAY CHORD
DEMO
MODE SET
TEMPO
ONE FINGER
FINGERD
PIANIST
ON BASS
MEMORY
PROGRAM
MAIN VOLUME
COMPOSER
LOAD
SOUND ARRANGER SET
RECORD
MEMORY
ON/OFF
RHYTHM SELECT/ MODE SET
DISPLAY HOLD
DRUMS
ACCOMP 3
ACCOMP 2
ACCOMP 1
BASS
LEFT
RIGHT 2
RIGHT 1
TRANSPOSE
MUTE
CONDUCTOR
PROGRAM
EXIT
DISK DRIVE
OTHER BALANCE
EASY REC
MANUAL PERCUSSION
SPLIT POINT
ONE TOUCH PLAY
MUSIC STYLE ARRANGER
VARIATION
FILL IN
INTRO & ENDING
SYNCHRO & BREAK
START/STOP
TECHNI CHORD
BANK
SET
IC1
IC2
IC3
IC4
IC5
CN1
CN2
VR2
X1

BEND (SXPG216421B)


PITCH BEND
VR2
R1
R2
VR1
MODULATION
CN2
MOD
E
BEND
+5
4
1


CN1
EXP
E
+5MI
E
SCK
DATA
+5D
IP1
MENU
SOUND
SEQUENCER
EASY REC
DISK DRIVE
OTHER BALANCE
EASY REC
DRUMS
ACCOMP 3
ACCOMP 2
ACCOMP 1
BASS
TRANSPOSE
LEFT
RIGHT 2
RIGHT 1
PART SELECT
DIGITAL EFFECT
SUSTAIN
SOUND EDIT
MEMORY
DIGITAL REVERB
PROGRAM
EXIT
CONDUCTOR
SOUND/VARIATION SELECT
MUTE
DISPLAY HOLD
VARIATION
FILL IN
INTRO & ENDING
SYNCHRO & BREAK
START/STOP
TECHNI CHORD
BANK
SET
PANEL MEMORY
IC1
IC2
IC3
IC4
IC5
X1
Q1
Q2
Q3
Q4
Q8
5
6
7
8
9
10
11
12
13
14

CP

NOTES:

- IC'S

IC1:	M37471M2196S
IC2:	HD74LS138P
IC3~5:	HD74LS07P

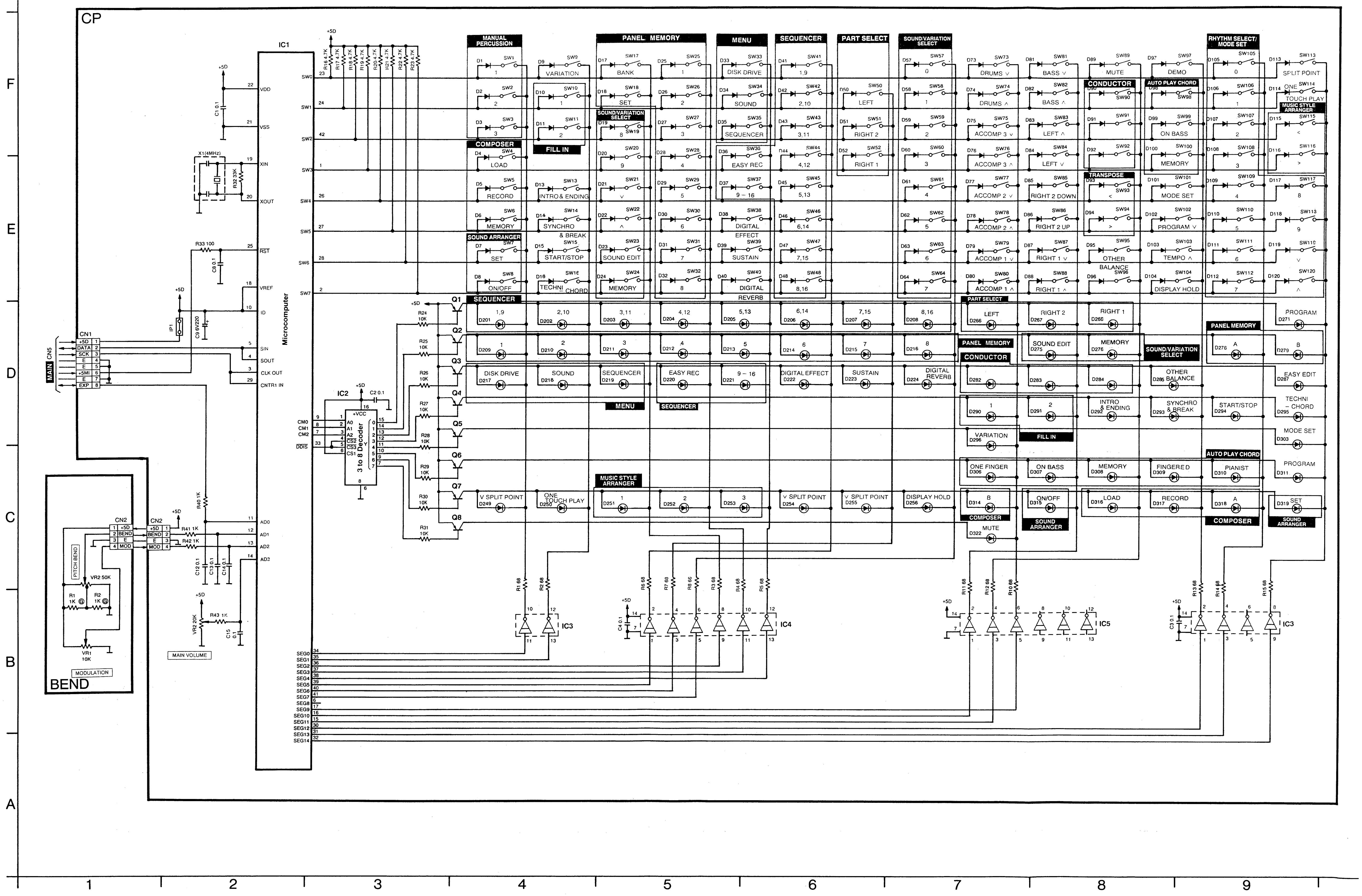
- TRANSISTORS

Q1~8:	2SA830SB

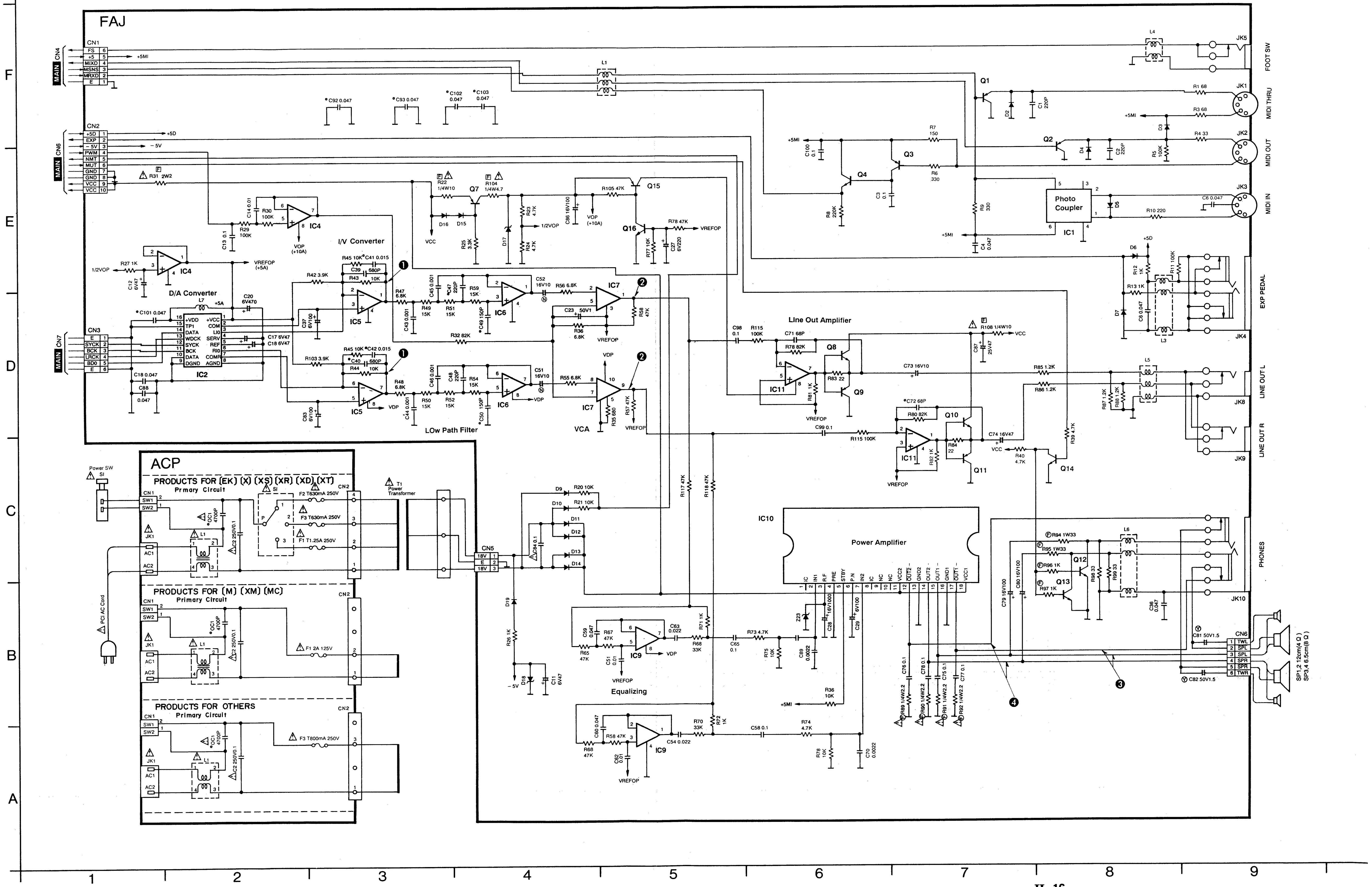
- DIODES

D1~11, 13, 15~48, 50~52, 57~64, 73~84, 87, 88~120:	MA165
D201~221, 250, 271, 275, 276, 278, 279, 287, 303, 311, 314~319:	SEL4417G
D222~224, 249, 251~256, 266~268, 282~285, 290~295, 298, 306~310, 322:	SEL4117RM

CP/BEND P.C. Diagram

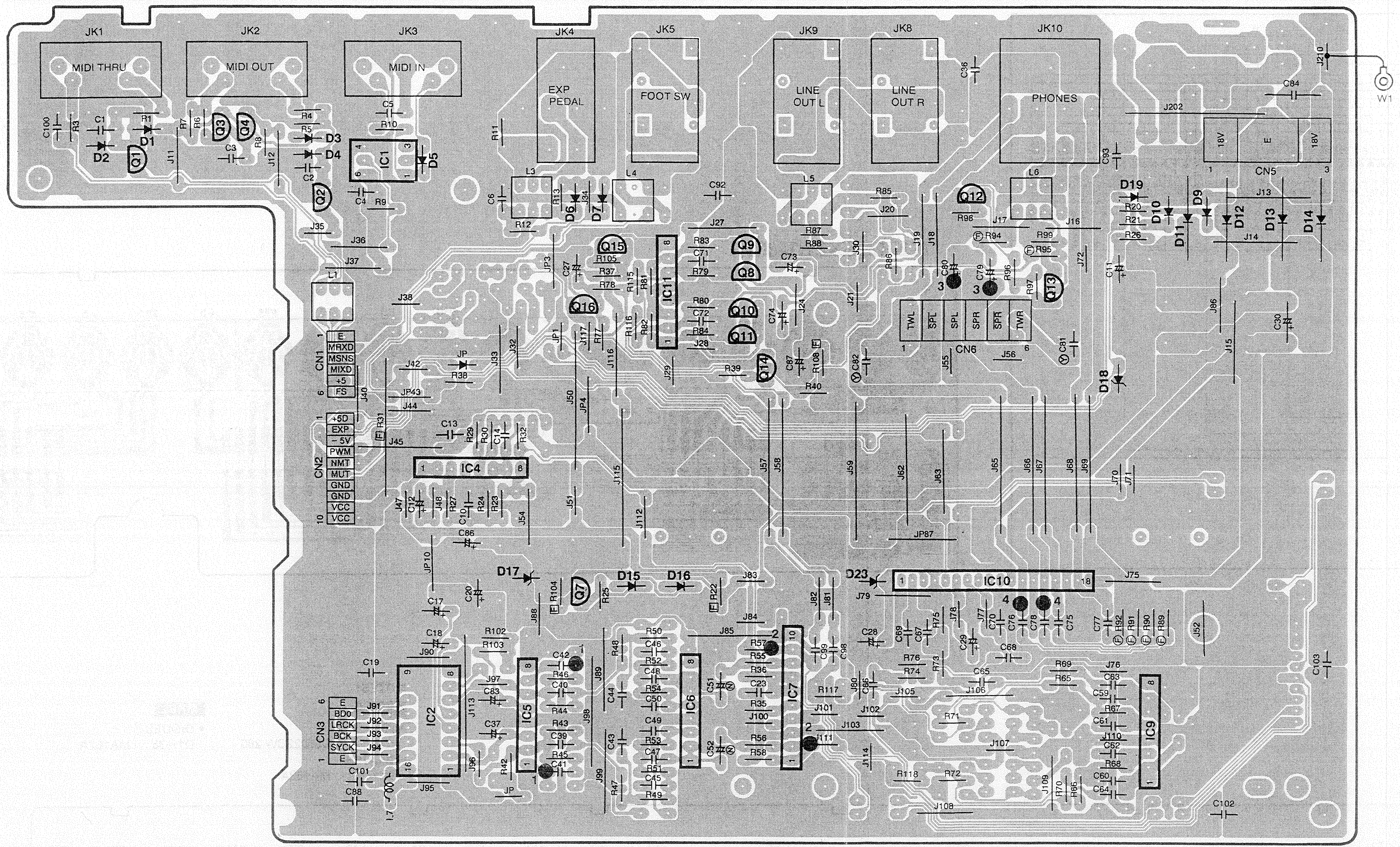

CP
BEND
IC1
Microcomputer
IC2
3 to 8 Decoder
IC3
IC4
IC5
CN1
CN2
CN5
MAIN
X1(4MHz)
MANUAL PERCUSSION
PANEL MEMORY
MENU
SEQUENCER
PART SELECT
SOUND/VARIATION SELECT
RHYTHM SELECT/ MODE SET
COMPOSER
FILL IN
SOUND ARRANGER
CONDUCTOR
AUTO PLAY CHORD
MUSIC STYLE ARRANGER
TRANSPOSE
VARIATION
INTRO & ENDING
SYNCHRO & BREAK
START/STOP
TECHNI CHORD
BANK
SET
SOUND EDIT
MEMORY
DISK DRIVE
SOUND
EASY REC
DIGITAL EFFECT
SUSTAIN
DIGITAL REVERB
LEFT
RIGHT 2
RIGHT 1
LOAD
RECORD
ON/OFF
DRUMS
BASS
ACCOMP 3
ACCOMP 2
ACCOMP 1
RIGHT 2 DOWN
RIGHT 2 UP
MUTE
OTHER BALANCE
DEMO
ON BASS
MODE SET
PROGRAM
TEMPO
DISPLAY HOLD
SPLIT POINT
ONE TOUCH PLAY
EASY EDIT
ONE FINGER
FINGERED
PIANIST
PITCH BEND
MODULATION
MAIN VOLUME
VR1 10K
VR2 50K
VR2 20K
SEG0–SEG14
Q1–Q8
F
E
D
C
B
A
1
2
3
4
5
6
7
8
9

FAJ/ACP P.C. Diagram


FAJ
CN1
FS +5 MIXD MSNS MRXD E
MAIN CN4
+5MI
CN2
+5D EXP −5V PWM NMT MUT GND GND VCC VCC
MAIN CN6
R31 2W2
CN3
E SYCK BCK LRCK BD0 E
MAIN CN7
IC2
D/A Converter
IC4
I/V Converter
IC5
IC6
LOw Path Filter
IC7
VCA
Q7
Q15
Q16
L1
L4
Q1
Q2
Q3
Q4
Photo Coupler
IC1
JK5
FOOT SW
JK1
MIDI THRU
JK2
MIDI OUT
JK3
MIDI IN
EXP PEDAL
JK4
L3
Line Out Amplifier
IC11
Q8
Q9
Q10
Q11
Q14
L5
LINE OUT L
JK8
LINE OUT R
JK9
IC10
Power Amplifier
L6
Q12
Q13
PHONES
JK10
CN6
TWL SPL SPL SPR SPR TWR
SP1,2 12cm(4Ω)
SP3,4 6.5cm(8Ω)
IC9
Equalizing
CN5
18V E 18V
D9 D10 D11 D12 D13 D14
Power SW
SI
ACP
PRODUCTS FOR (EK) (X) (XS) (XR) (XD) (XT)
Primary Circuit
PRODUCTS FOR (M) (XM) (MC)
Primary Circuit
PRODUCTS FOR OTHERS
Primary Circuit
F2 T630mA 250V
F3 T630mA 250V
F1 T1.25A 250V
F1 2A 125V
F3 T800mA 250V
T1 Power Transformer
PCI AC Cord
JK1 AC1 AC2
SW1 SW2
VREFOP
VDP
VCC
1 2 3 4 5 6 7 8 9
A B C D E F G

FAJ/ACP P.C. Board

FAJ (SXPG219411)


JK1
MIDI THRU
JK2
MIDI OUT
JK3
MIDI IN
JK4
EXP PEDAL
JK5
FOOT SW
JK9
LINE OUT L
JK8
LINE OUT R
JK10
PHONES
J210
W1
C84
J202
CN5
18V
E
18V
C100
R3
C1
R1
D1
D2
Q1
Q3
Q4
R7
R6
J11
C3
R8
J12
R4
R5
D3
D4
C2
Q2
C5
R10
IC1
D5
C4
R9
R11
L3
C6
R13
D6
R14
D7
L4
R12
C92
L5
R85
J20
C36
L6
Q12
C93
D19
R20
R21
R26
D10
D9
D11
D12
D13
D14
J13
J14
J35
J36
J37
L1
J38
J27
Q15
R105
R37
R78
R115
R81
IC11
R83
C71
R79
Q9
Q8
R87
R88
J30
J19
J18
R86
C80
C79
R96
R98
J17
R94
R95
R99
J16
Q13
R97
J72
C11
J21
J24
C73
C27
JP3
Q16
R116
R82
R80
C72
R84
J28
Q10
Q11
C74
TWL
SPL
SPL
SPR
SPR
TWR
CN6
J56
J55
C81
C82
J86
J15
C30
D18
CN1
MRXD
MSNS
MIXD
+5
FS
JP
R38
J42
JP43
J44
J33
J32
JP1
R117
R77
J116
R39
Q14
C87
R108
R40
J29
J40
CN2
+5D
EXP
-5V
PWM
NMT
MUT
GND
GND
VCC
VCC
R31
J45
C13
R29
R30
C14
R32
IC4
J50
JP4
J57
J58
J59
J62
J63
J65
J66
J67
J68
J69
J70
J71
J115
J47
C12
J48
R27
C10
R24
R23
J54
J51
J112
C86
JP87
JP10
D17
R104
Q7
R25
D15
D16
R22
J83
D23
J79
IC10
J75
C17
C20
J88
J84
J82
J81
C18
J90
R102
R103
J85
R50
C46
R52
C48
R54
C50
C42
R48
C44
R46
C40
R44
R43
C39
C41
R45
J89
J98
J99
C43
R47
R53
C47
R51
C45
R49
IC6
C51
C52
R57
R55
R36
C23
R35
J100
R56
R58
IC7
C99
C98
R117
J101
J80
C85
J102
J103
R111
C28
C69
C67
R75
J78
J77
C70
C76
C78
C75
C77
R92
R91
R90
R89
J52
R76
R74
R73
C29
C68
C65
J106
J105
R71
J107
R69
R65
J76
C63
C59
R67
C61
J110
C62
R68
C60
C64
IC9
C103
J114
R118
R72
J108
J109
R70
R66
C102
C19
CN3
E
BDO
LRCK
BCK
SYCK
E
J91
J92
J93
J94
IC2
J97
C83
J113
C37
IC5
J96
R42
JP
C101
C88
L7
J95

FAJ

NOTES:

- IC'S

IC1:	SVIGTLP513
IC2:	PCM69AP
IC4~6, 9, 11:	M5218AFP
IC7:	SVIGM5241L
IC10:	LA4705

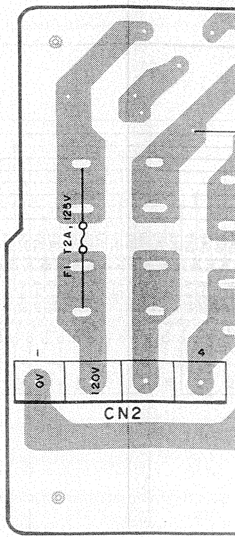
- TRANSISTORS

Q1~3, 9, 11, 15:	2SA1015-GR
Q4, 8, 10, 12~14, 16:	2SC1815GR

- DIODES

D1~7, 15, 16:	MA165
D9, 10:	⚠ SVDGERA1502
D11~14:	⚠ SVDS3V20
D17:	MA4100L
D18:	MA4051
D19:	⚠ SVDGERA1502
D23:	MA4075L

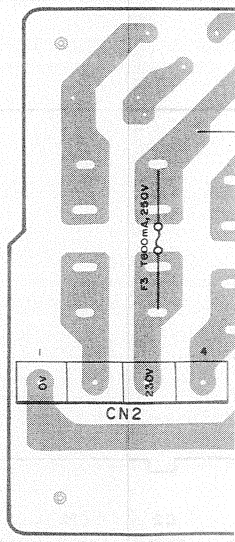
ACP M MC


F1 T2A, 125V
1
0V
120V
4
CN2

- FUSE

F1: XBA1C20NU100

ACP Others (SX


F3 T600mA, 250V
1
0V
230V
4
CN2

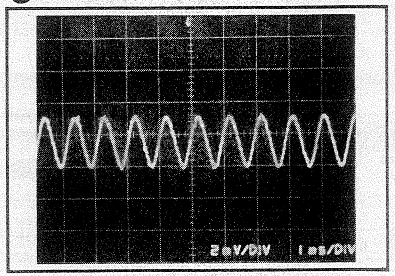
- FUSE

F3: XBA2C08TB0

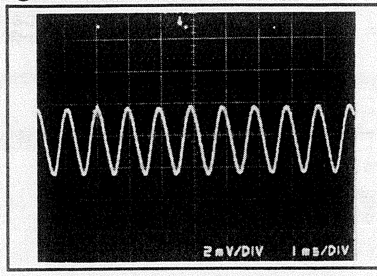
■ Measuring Conditions

1. The tone signal output varies with the level of key pressing force.
   In this measurement, the waveform obtained with maximum key pressing force is shown.
2. Set the initial mode before measurement.
   - CONDUCTOR .... POLY 1
   - SOUND SELECT ..... No. 52: PICCOLO
   - Keyboard .... C4 Key

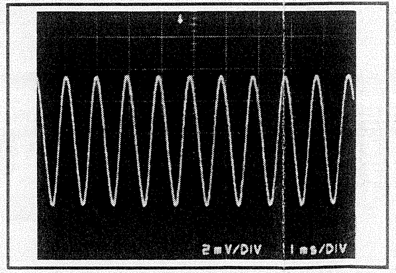
❶



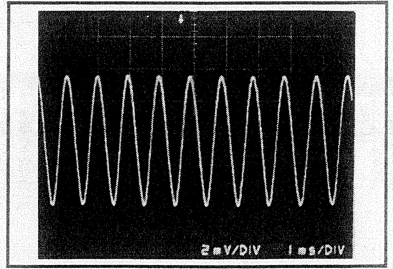
❷



❸

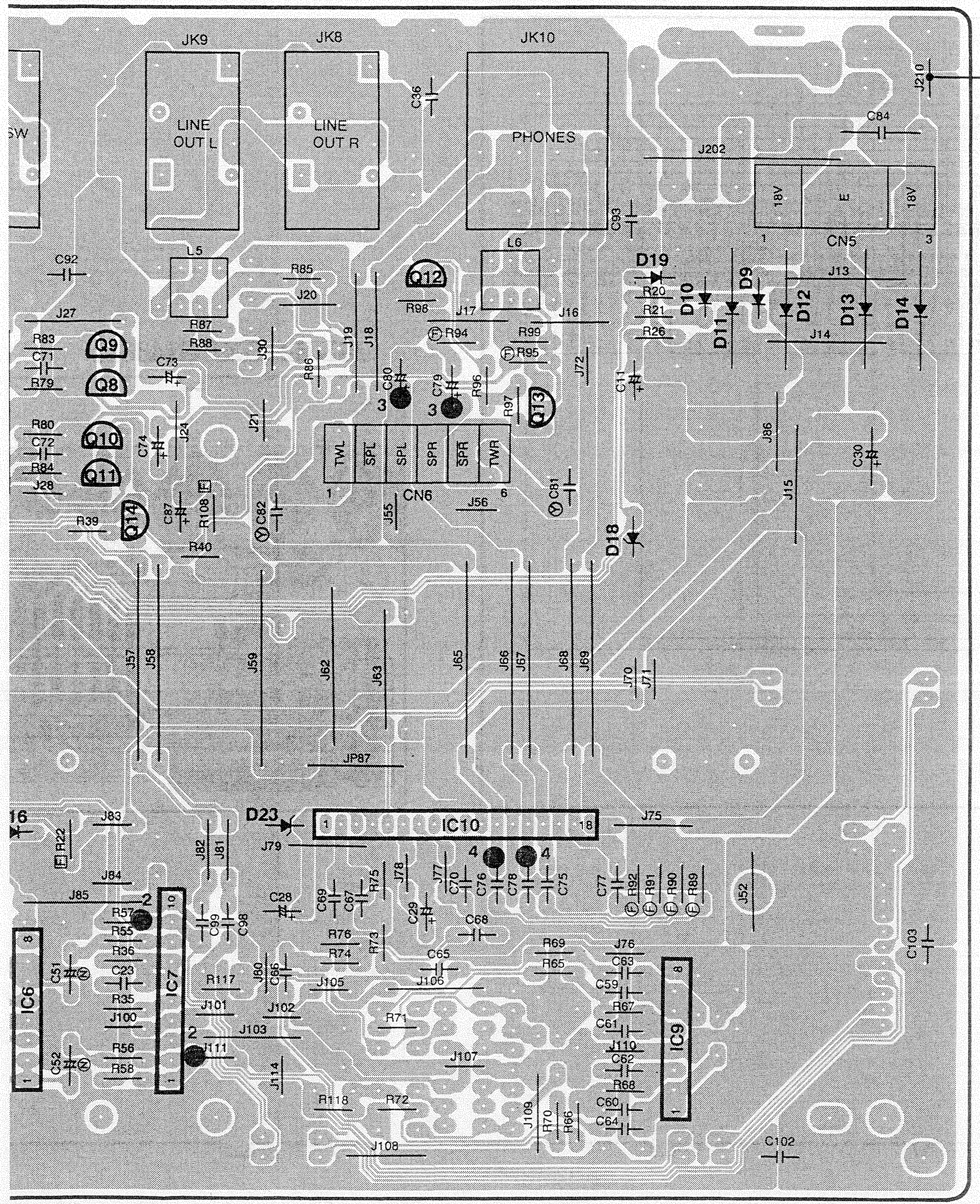


❹



F
E
D
C
B
A

1 2 3 4 5 6 7 8 9 10

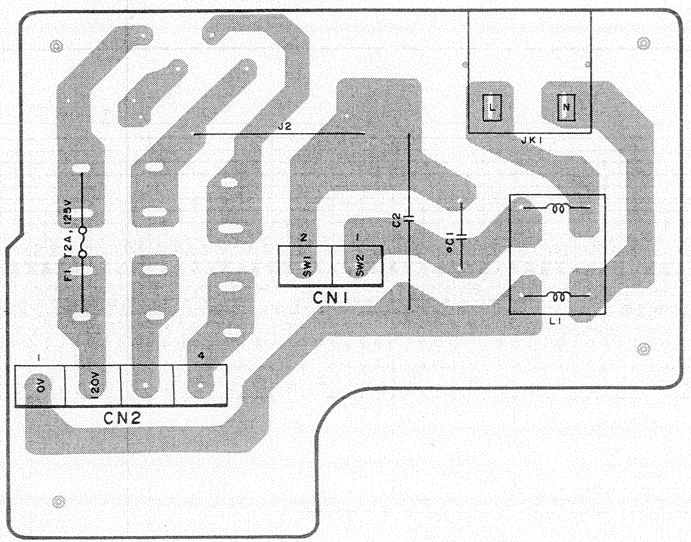

JK9
LINE OUT L
JK8
LINE OUT R
JK10
PHONES
J210
W1
C84
J202
CN5
18V
E
18V
L5
L6
Q12
Q9
Q8
Q10
Q11
Q14
Q13
D19
D10
D9
D11
D12
D13
D14
D18
CN6
TWL
SPL
SPL
SPR
SPR
TWR
IC10
D23
IC6
IC7
IC9
JP87
C102
C103

FAJ

NOTES:

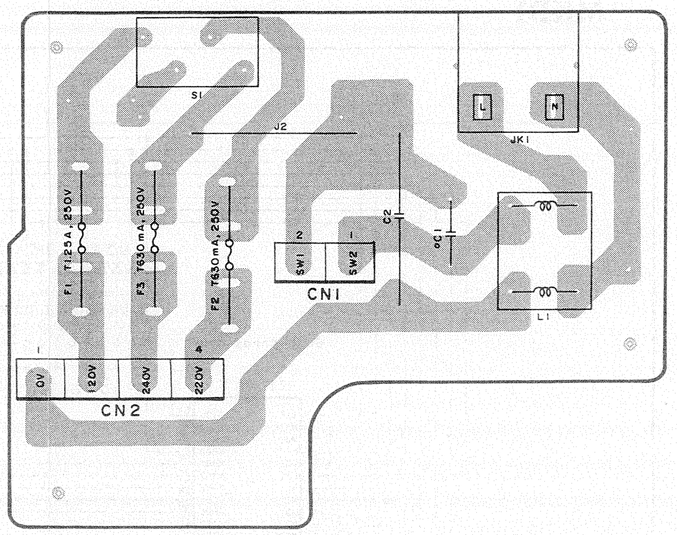
- IC'S
  - IC1: SVIGTLP513
  - IC2: PCM69AP
  - IC4~6, 9, 11: M5218AFP
  - IC7: SVIGM5241L
  - IC10: LA4705
- TRANSISTORS
  - Q1~3, 9, 11, 15: 2SA1015-GR
  - Q4, 8, 10, 12~14, 16: 2SC1815GR
- DIODES
  - D1~7, 15, 16: MA165
  - D9, 10: ⚠ SVDGERA1502
  - D11~14: ⚠ SVDS3V20
  - D17: MA4100L
  - D18: MA4051
  - D19: ⚠ SVDGERA1502
  - D23: MA4075L

ACP M MC XM (SXPG216431A)


J2
JK1
F1 T2A 125V
C2
C1
CN1
SW1
SW2
L1
CN2
0V
120V

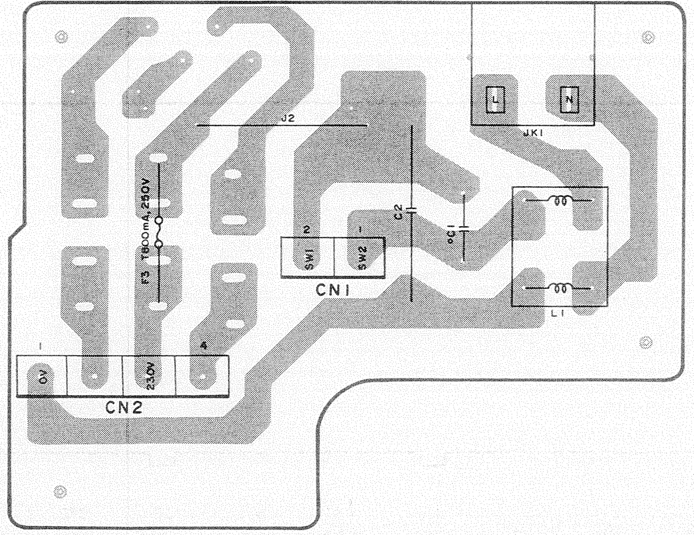
- FUSE
  - F1: XBA1C20NU100

ACP XB X XR XS XD XT (SXPG216441A)

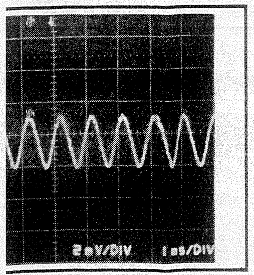

S1
J2
JK1
F1 T1.25A 250V
F3 T630mA 250V
F2 T630mA 250V
C2
C1
CN1
SW1
SW2
L1
CN2
0V
120V
240V
220V

- FUSE
  - F1: XBA2C12TB0
  - F2, 3: XBA2C06TB0

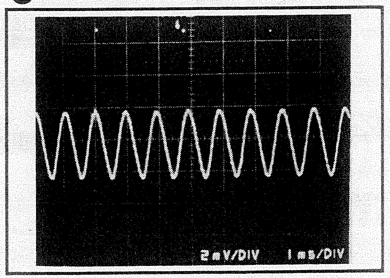
ACP Others (SXPG216411A)


J2
JK1
F3 T800mA 250V
C2
C1
CN1
SW1
SW2
L1
CN2
0V
230V

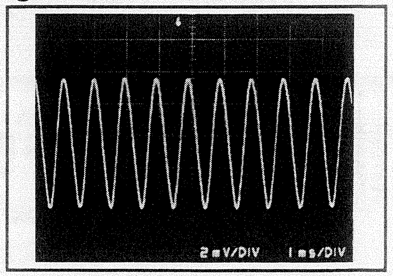
- FUSE
  - F3: XBA2C08TB0



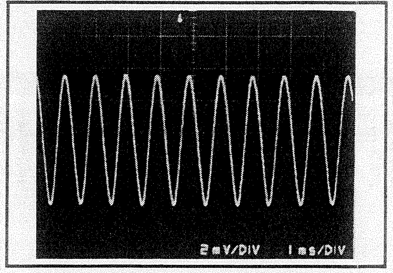
②



③



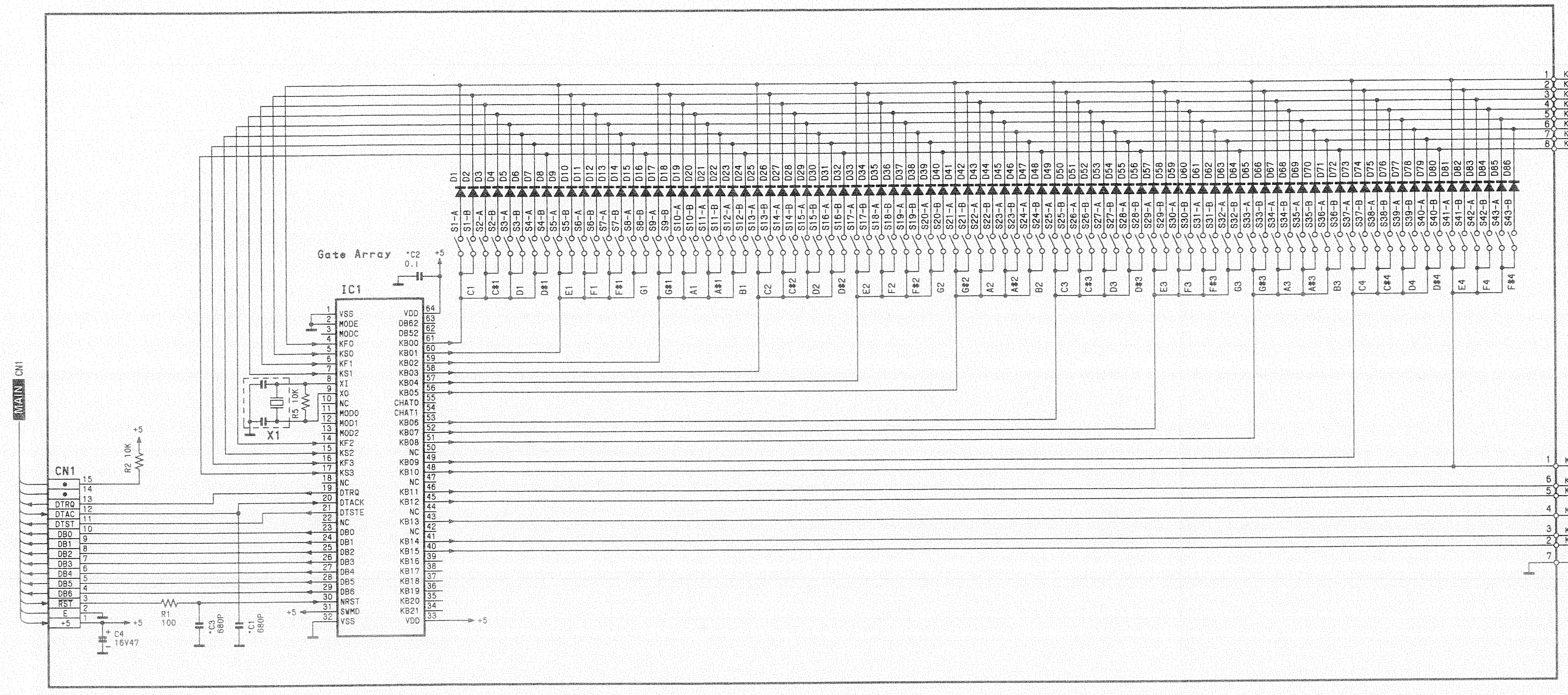
④



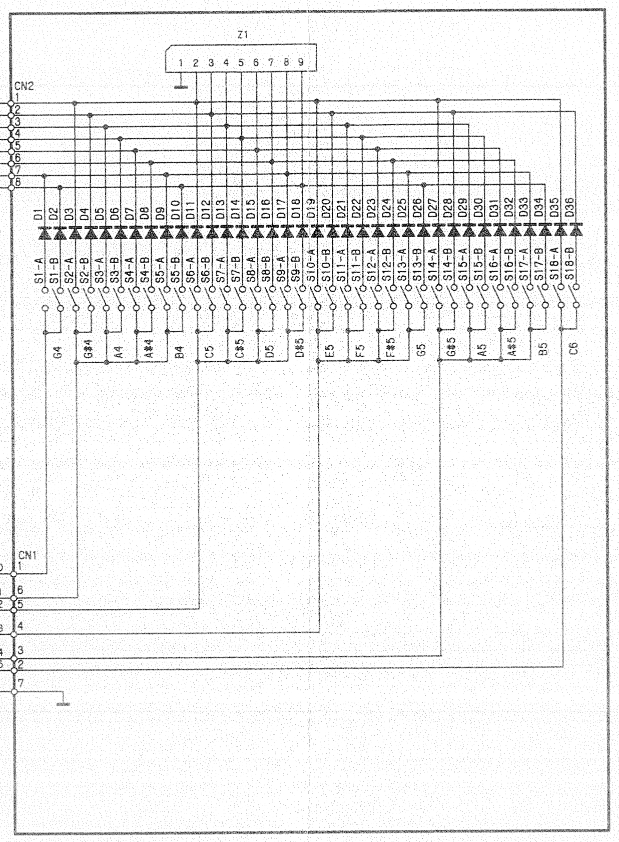
5 6 7 8 9 10 11 12 13 14

MKB1/MKB2

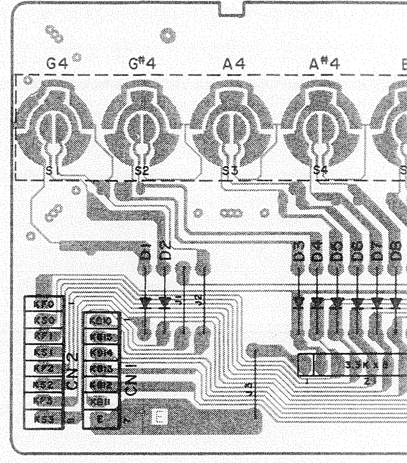
MKB1


Gate Array
IC1
X1
CN1
MAIN CN1
R1 100
R2 10K
R5 10K
C1 680P
C3 680P
C4 16V47
+5
KF0
KS0
KF1
KS1
KF2
KS2
KF3
KS3
KB10
KB11
KB12
KB13
KB14
KB15
E

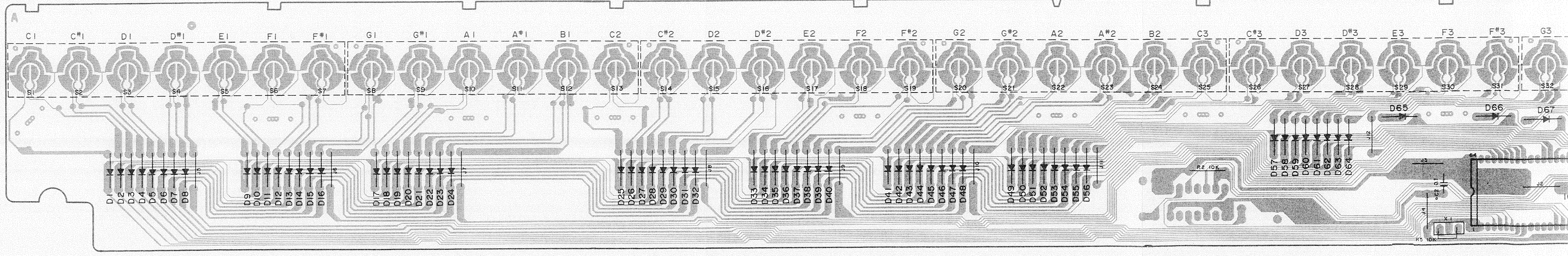
MKB2


Z1
CN2
CN1
KB10
KB11
KB12
KB13
KB14
KB15
E

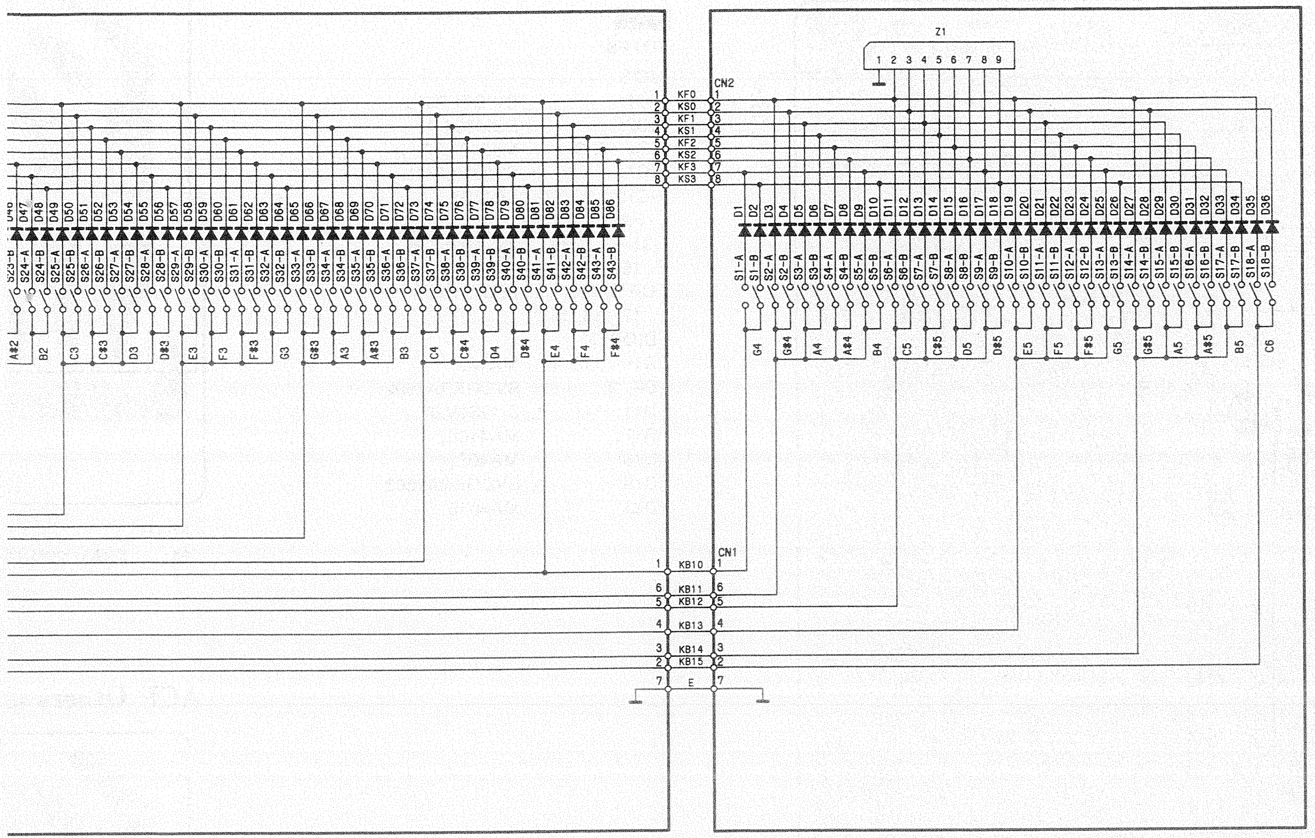
MKB2 (SXPG143611)


G4
G#4
A4
A#4
S1
S2
S3
S4
D1
D2
D3
D4
D5
D6
D7
D8
CN2
CN1
E

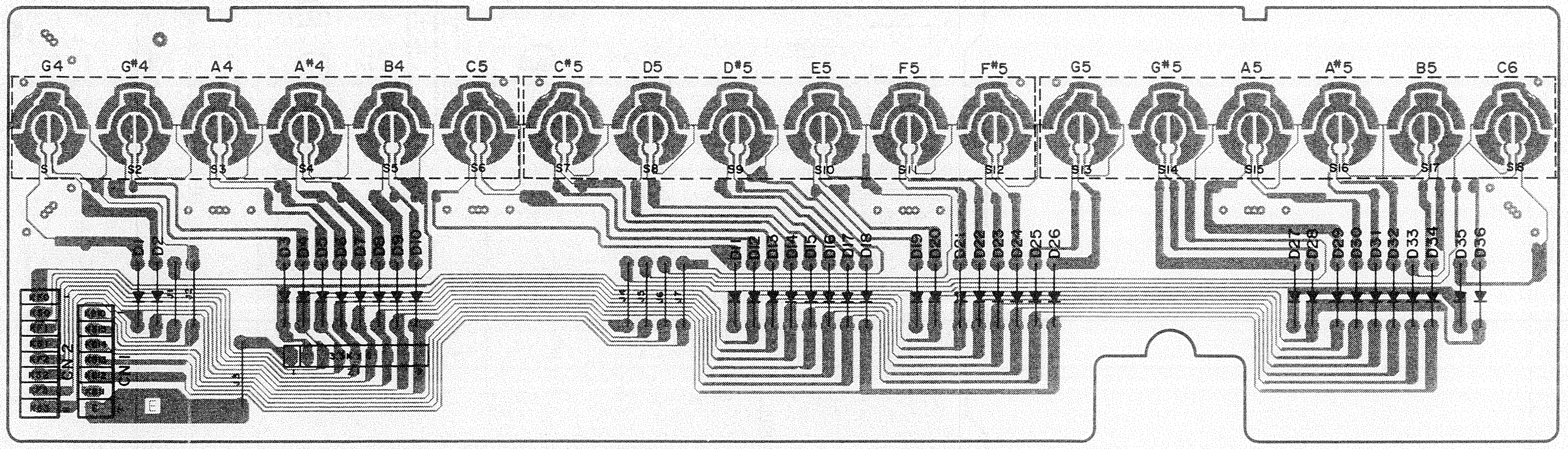
MKB1 (SXPG143531)


A
C1
C#1
D1
D#1
E1
F1
F#1
G1
G#1
A1
A#1
B1
C2
C#2
D2
D#2
E2
F2
F#2
G2
G#2
A2
A#2
B2
C3
C#3
D3
D#3
E3
F3
F#3
G3
D65
D66
D67
R2 10K
R5 10K
X1

MKB2


Z1
CN2
KF0
KS0
KF1
KS1
KF2
KS2
KF3
KS3
CN1
KB10
KB11
KB12
KB13
KB14
KB15
E
G4
G#4
A4
A#4
B4
C5
C#5
D5
D#5
E5
F5
F#5
G5
G#5
A5
A#5
B5
C6

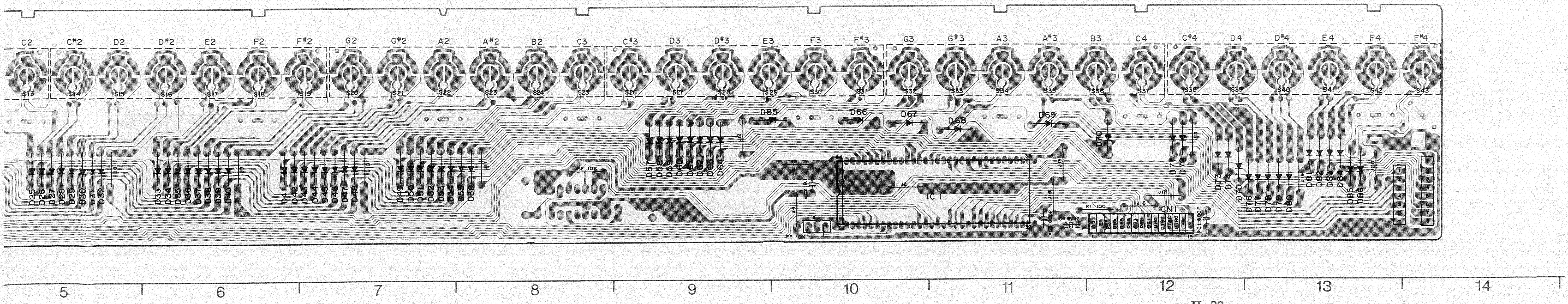
MKB2 (SXPG143611)


G4
G#4
A4
A#4
B4
C5
C#5
D5
D#5
E5
F5
F#5
G5
G#5
A5
A#5
B5
C6
CN2
CN1

NOTES:

MKB1
- IC
  IC1: D65022CW-285
- DIODES
  D1～86: MA162A

MKB2
- DIODES
  D1～36: MA162A


C2
C#2
D2
D#2
E2
F2
F#2
G2
G#2
A2
A#2
B2
C3
C#3
D3
D#3
E3
F3
F#3
G3
G#3
A3
A#3
B3
C4
C#4
D4
D#4
E4
F4
F#4
IC 1
CN1
5
6
7
8
9
10
11
12
13
14

REPLACEMENT PARTS LIST......P.C.B. and Wiring Parts

Notes:

1. The marking (RTL) indicates that the Retention Time is limited for this item. After the discontinuation of this assembly in production, the item will continue to be available for a specific period of time. The retension period of availability is dependant on the type of assembly, and in accordance with the laws governing part and product retention.
   After the end of this period, the assembly will no longer be available.
2. Important safety notice
   Components identified by ⚠ mark have special characteristics important for safety. When replacing any of these components, use only manufacturer's specified parts.
3. The "S" mark is service standard parts and may differ from production parts.
4. ○ mark are new parts.
5. For part No. with area mark, check the area when placing an order.

■ PRINTED CIRCUIT BOARD

	RTL	Area	Part No.	Description	P/S
○	RTL	Others	SXPG219311	MAIN	
○	RTL	M [illegible]	SXPG219331	MAIN	1
○	RTL		SXPG219411	FAJ	1
○	RTL		SXPG219511	CP	1
	RTL	Others	SXPG216411A	ACP	1
	RTL	M [illegible] [illegible]	SXPG216431A	ACP	1
	RTL	[illegible] X [illegible] [illegible] [illegible] [illegible]	SXPG216441A	ACP	1
○	RTL		SXPG216421B	BEND	1
	RTL		SXPG143531	MKB1	1
	RTL		SXPG143611	MKB2	1
○			QSLG004BA	LCD	1

MAIN MAIN CIRCUIT

	Ref. No.	Part No.	Description	P/S
	INTEGRATED CIRCUITS			
	IC1	D70325GJ-10	16 bit Microcomputer	1
	IC2	D65012GF-A79	Gate Array	1
○	IC3	QSIGCKN12AX	4M EP ROM	1
○	IC4	QSIGCKN12BX	4M EP ROM	1
○	IC5	QSIG03C08048	8M bit Rhthem Pattern ROM	1
	IC6, 7	T518129AFWL8	1M bit Pseudo Static RAM	2
	IC8	M5256BFP85LL	256K bit STATIC RAM	1
	IC9	TC7SU04F	Inverter	1
○	IC10	TC7W32F	Inverter	1
	IC12	D74HC244GS	3 State Buffers	1
	IC13	D72068GF-3B9	Floppy Disk Controller	1
	IC15	D93083GDLBD	Tone Generator LSI	1
○	IC16	QSIGH3C16CN6	16M bit Wave ROM	1
○	IC17	QSIGH3C16CN7	16M bit Wave ROM	1
	IC18	HM65256BLF10	256K bit Pseudo Static RAM	1
	IC19	D74HC74GS	D-type Flip flpos	1
	IC21	TC40H000F	Quad 2-input NAND Gates	1
	IC22	TC7S86F	2 INPUT OR Gate	1
	IC23	TC40H004F	Hex Inverters	1
○	IC25	TC7S14F	OR Gate	1
	TRANSISTORS			
	Q1, 4	2SD601AQ	Transistor	2
	Q2, 10	2SB709AR	Transistor	2
	Q3, 5	2SD601AQ	Transistor	2
	Q6 ⚠	2SA1643	Transistor	1
S	Q8	2SC1815GR	Transistor	1
	DIODES			
	D1, 2, 6, 11, 13	MA110	Diode	5
○	D3	MA732	Diode	1
	D4	MA2062LF	Zener, 6.2V	1
	D5	MA738	Diode	1
	D7	MA8051	Zener, 5.1V	1
	D9, 10	MA151WK	Diode	2
	D13	MA110	Diode	1
	OSCILLATORS			
	X1	SVQGA20MX040	20MHz, Ceramic Oscillator	1
	X2	QSXG1I3200A	32MHz, Quartz Oscillator	1
	X3	QSXG1I4915A	49MHz, Quartz Oscillator	1
	COMPONENT COMBINATIONS			
	Z1~3	EXBV8V221J	220Ω×4	3
	Z4~8	EXBS8V103J	10kΩ×4	5
	Z9	EXBS8V102J	1kΩ×4	1
	Z10~17	EXBS8V101J	100Ω×4	8
	Z18, 19	EXBS8V103J	10kΩ×4	2
	Z20	EXBS8V102J	1kΩ×4	1
	Z21, 25, 26	EXBS8V103J	10kΩ×4	3
	Z22~24	EXBV8V221J	220Ω×4	3
	Z30~38	EXBS8V471J	470Ω×4	9
	Z39, 40	EXBS8V103J	10kΩ×4	2
	COILS			
	L2	QLQGT1B800MA	Coil	1
	L3	QLCGTJR10KA	Coil	1
	RESISTORS			
	R1~4	ERJ6GEYJ103V	10kΩ	4
	R5	ERJ6GEYJ101V	100Ω	1
	R6	ERJ6GEYJ102V	1kΩ	1
	R7, 8	ERJ6GEYJ101V	100Ω	2
	R10	ERJ6GEYJ472V	4.7kΩ	1
	R11	ERJ6GEYJ103V	10kΩ	1
	R12	ERJ6GEYJ101V	100Ω	1
	R13, 14	ERJ6GEYJ472V	4.7kΩ	2
	R16	ERJ6GEYJ102V	1kΩ	1
	R17	ERJ6GEYJ154V	150kΩ	1
	R18	ERJ6GEYJ103V	10kΩ	1
	R19	ERJ6GEYJ104V	100kΩ	1
	R20	ERJ6GEYJ102V	1kΩ	1
	R21	ERJ6GEYJ101V	100Ω	1
	R22	ERJ6GEYJ103V	10kΩ	1
	R23, 24	ERJ6GEYJ101V	100Ω	2
	R25	ERJ6GEYJ102V	1kΩ	1
	R26~30	ERJ6GEYJ103V	10kΩ	5
	R31	ERJ6GEYJ220V	22Ω	1
	R32	ERJ6GEYJ473V	47kΩ	1
	R33	ERJ6GEYJ154V	150kΩ	1
	R34	ERJ6GEYJ103V	10kΩ	1
	R35	ERJ6GEYJ472V	4.7kΩ	1
	R36	ERJ6GEYJ222V	2.2kΩ	1

Ref. No.	Part No.	Description	P/S
○ R37	ERJ6GEYJ272V	2.7kΩ	1
R38	ERJ6GEYJ103V	10kΩ	1
R39, 40	ERJ6GEYJ101V	100Ω	2
R41, 43	ERJ6GEYJ222V	2.2kΩ	2
R44~46, 54	ERJ6GEYJ103V	10kΩ	4
R55	ERJ6GEYJ472V	4.7kΩ	1
R57	ERJ6GEYJ103V	10kΩ	1
R59	ERJ6GEYJ472V	4.7kΩ	1
R61, 62	ERJ6GEYJ103V	10kΩ	2
R63	ERJ6GEYJ472V	4.7kΩ	1
R65, 66	ERJ6GEYJ103V	10kΩ	2
R67~69	ERJ6GEYJ101V	100Ω	3
R70	ERJ6GEYJ103V	10kΩ	1
R71	ERJ6GEYJ221V	220Ω	1
R72	ERJ6GEYJ223V	22kΩ	1
R73~75	ERJ6GEYJ221V	220Ω	3
R77	ERJ6GEYJ471V	470Ω	1
R78	ERJ6GEYJ473V	47kΩ	1
R79	ERJ6GEYJ101V	100Ω	1
R85	ERJ6GEYJ471V	470Ω	1
R86	ERJ6GEYJ221V	220Ω	1
R90~93	ERJ6GEYJ222V	2.2kΩ	4
R94, 95	ERJ6GEYJ101V	100Ω	2
○ R96	ERG1SJ331	330Ω, 1W, Flame Type	1
R97	ERJ6GEYJ221V	220Ω	1
R98	ERJ6GEYJ103V	10kΩ	1
R99	ERJ6GEYJ221V	220Ω	1
R100	ERJ6GEYJ102V	1kΩ	1
R101	ERJ6GEYJ103V	10kΩ	1
R102	ERJ6GEYJ472V	4.7kΩ	1
CAPACITORS			
C2	ECUV1H104ZFX	0.1μF	1
C3, 5	ECUV1H101JG	100pF	2
C6	ECUV1H220JN	22pF	1
C7	ECUV1H030CCN	3pF	1
C8, 9	ECUV1H104ZFX	0.1μF	2
C10	ECUV1H102JX	0.001μF	1
C11, 12, 15, 16, 18	ECUV1H104ZFX	0.1μF	5
C19	ECUV1H101JG	100pF	1
C20	ECUV1H100DCN	10pF	1
C22~25, 27, 30, 32~34	ECUV1H104ZFX	0.1μF	9
C35	ECUV1H331JG	330pF	1
C36, 37, 39, 41, 42, 46, 47	ECUV1H104ZFX	0.1μF	7
C48	ECUV1H101JG	100pF	1
C49	ECUV1H104ZFX	0.1μF	1
C51	ECEA0JU102	1000μF, 6.3V	1
C52	ECEA1EKA470	47μF, 25V	1
C53, 54	EECS5R5V105	1F, 5.5V, Memory Back-up	2
C56	ECUV1H222KX	0.0022μF	1
C57, 58	ECUV1H104ZFX	0.1μF	2
C59	ECEA1CKN100	10μF, 16V	1

FAJ FILTER & AMP CIRCUIT

Ref. No.	Part No.	Description	P/S
INTEGRATED CIRCUITS			
IC1	SVIGTLP513	Photo Coupler	1
○ IC2	PCM69AP	Dynamic Noise Reduction	1
IC4~6, 9, 11	M5218AFP	Operational Amplifier	5
IC7	SVIGM5241L	Dual VCA	1
IC10	LA4705	Power Amplifier	1
TRANSISTORS			
S Q1~3, 9, 11, 15	2SA1015-GR	2SA933STRS (SUB. Part)	6
S Q4, 8, 10, 12~14, 16	2SC1815GR	Transistor	7
DIODES			
D1~7, 15, 16	MA165	Diode	9
D9, 10 ⚠	SVDGERA1502	Rectifier	2
S D11~14 ⚠	SVDS3V20	Rectifier	4
○ D17	MA4100L	Zener, 10V	1
D18	MA4051	Zener, 5.1V	1
D19 ⚠	SVDGERA1502	Rectifier	1
○ D23	MA4075L	Zener, 7, 5V	1
COILS			
L1, 3, 5, 6	QLQGT3T150SA	Coil	4
L4	QLQGT2T150SA	Coil	1
L7	QLQGT1B800MA	Coil	1
JACKS			
JK1~3	SJSG1370A	MIDI	3
JK4, 10	SJJG100A	Jack	2
JK5, 8, 9	QJJG003AA	Jack	3
WIRE			
○ W1	QEXGRA01008A	Wire	1
RESISTORS			
R1	ERDS2TJ680	68Ω	1
R3	ERDS2TJ680	68Ω	1
R4	ERDS2TJ330	33Ω	1
R5	ERDS2TJ104	100kΩ	1
R6	ERDS2TJ331	330Ω	1
R7	ERDS2TJ151	150Ω	1
R8	ERDS2TJ224	220kΩ	1
R9	ERDS2TJ331	330Ω	1
R10	ERDS2TJ221	220Ω	1
R11	ERDS2TJ104	100kΩ	1
R12, 13	ERDS2TJ102	1kΩ	2
R20, 21	ERDS2TJ103	10kΩ	2
R22 ⚠	ERD2FCVG100	10Ω, 1/4W, Fuse Type	1
R23, 24	ERDS2TJ472	4.7kΩ	2
R25	ERDS2TJ332	3.3kΩ	1
R26, 27	ERDS2TJ102	1kΩ	2
R29, 30	ERDS2TJ104	100kΩ	2
R31 ⚠	ERQ2CJP2R0S	2Ω, 2W, Fuse Type	1
R32	ERDS2TJ823	82kΩ	1
R35	ERDS2TJ681	680Ω	1
R36	ERDS2TJ682	6.8kΩ	1
R37	ERDS2TJ332	3.3kΩ	1
R38	ERDS2TJ103	10kΩ	1
R39	ERDS2TJ473	47kΩ	1
R40	ERDS2TJ472	4.7kΩ	1
R42	ERDS2TJ392	3.9kΩ	1
R43~46	ERDS2TJ103	10kΩ	4
R47, 48	ERDS2TJ682	6.8kΩ	2
R49~54	ERDS2TJ153	15kΩ	6
R55, 56	ERDS2TJ682	6.8kΩ	2
R57, 58	ERDS2TJ473	47kΩ	2
R65~68	ERDS2TJ473	47kΩ	4
R69, 70	ERDS2TJ333	33kΩ	2

	Ref. No.	Part No.	Description	P/S
	R71, 72	ERDS2TJ102	1kΩ	2
	R73, 74	ERDS2TJ472	4.7kΩ	2
	R75~77	ERDS2TJ103	10kΩ	3
	R78	ERDS2TJ473	47kΩ	1
	R79, 80	ERDS2TJ823	82kΩ	2
	R81, 82	ERDS2TJ102	1kΩ	2
	R83, 84	ERDS2TJ220	22Ω	2
	R85~88	ERDS2TJ122	1.2kΩ	4
	R89~92 ⚠	ERD25FVJ2R2	2.2Ω, 1/4W, Flame-Ploof	4
	R94, 95	ERG1SJ330	33Ω, 1W	2
	R96, 97	ERDS2TJ102	1kΩ	2
	R98, 99	ERDS2TJ330	33Ω	2
	R103	ERDS2TJ392	3.9kΩ	1
	R104 ⚠	ERD2FCVJ4R7	4.7Ω, 1/4W, Fuse Type	1
	R105	ERDS2TJ473	47kΩ	1
	R108 ⚠	ERD2FCVG100	10Ω, 1/4W, Fuse Type	1
	R115, 116	ERDS2TJ104	100kΩ	2
	R117, 118	ERDS2TJ473	47kΩ	2
	CAPACITORS			
	C1, 2	ECCR1H221J	220pF	2
	C3	ECQV1H104JM	0.1μF	1
	C4~6	ECKR1E473ZV	0.047μF	3
	C10	ECQG1H102KZ	0.001μF	1
	C11, 12	ECEA0JKA470	47μF, 6.3V	2
	C13	ECQV1H104JM	0.1μF	1
	C14	ECQB1H103JF	0.01μF	1
	C17, 18	ECEA0JKA470	47μF, 6.3V	2
	C19	ECKR1E473ZV	0.047μF	1
	C20	ECEA0JU471	470μF, 6.3V	1
	C23	ECEA1HKN010	1μF, 50V	1
	C27	ECEA0JKA221	220μF, 6.3V	1
	C28	ECEA1CU102	1000μF, 16V	1
	C29	ECEA0JKA101	100μF, 6.3V	1
	C30	ECA1EM682E	6800μF, 25V	1
	C36	ECKR1E473ZV	0.047μF	1
	C37	ECEA0JKA101	100μF, 6.3V	1
	C39, 40	ECCR1H681J	680pF	2
	C41, 42	ECQB1H153JF	0.015μF	2
	C43~46	ECQG1H102KZ	0.001μF	4
	C47, 48	ECCR1H221J	220pF	2
	C49, 50	ECCR1H151J	150pF	2
	C51, 52	ECEA1CKN100	10μF, 16V	2
	C59, 60	ECQB1H473JF	0.047μF	2
	C61, 62	ECQB1H103JF	0.01μF	2
	C63, 64	ECQB1H223JF	0.022μF	2
	C65~68	ECQV1H104JM	0.1μF	4
	C69, 70	ECQG1H222KZ	0.0022μF	2
	C71, 72	ECCR1H680J	68pF	2
	C73, 74	ECEA1CKA470	47μF, 16V	2
	C75~78	ECRF1H104ZF	0.1μF	4
	C79, 80	ECEA1CKA101	100μF, 16V	2
	C81, 82	ECEA50Y1R5	1.5μF, 50V	2
	C83	ECEA0JKA101	100μF, 6.3V	1
	C84 ⚠	ECQE1A104M6	0.1μF, 125V	1
	C86	ECEA1CKA101	100μF, 16V	1
	C87	ECEA1EKA470	47μF, 25V	1
	C88	ECKR1E473ZV	0.047μF	1
	C92, 93	ECKR1E473ZV	0.047μF	2
	C98, 99	ECQV1H104JM	0.1μF	2
	C100	ECRF1H104ZF	0.1μF	1
	C101~103	ECKR1E473ZV	0.047μF	3

ACP AC POWER SUPPLY CIRCUIT

	Ref. No.	Part No.	Description	P/S
	LINE FILTER			
	L1 ⚠	SLTGLF3	Line Filter	1
	JACK			
	JK1 ⚠	SJVD0203B	AC Inlet	1
	SWITCH			
	S1 ⚠	SSRG100A	Voltage Selector, XB X XR XS XD XT	1
	FUSES			
	F1 ⚠	XBA1C20NU100	2A, 125V, M MC XM EK	1
	F1 ⚠	XBA2C12TB0	T1.25A, 250V XB X XR XS XD XT	1
	F2, 3 ⚠	XBA2C06TB0	T630mA, 250V XB X XR XS XD XT	2
	F3 ⚠	XBA2C08TB0	T800mA, 250V EN EZ EW EF EA EH EP XL	1
	CAPACITORS			
	C1 ⚠	ECKCVA1472MF	4700pF, Line Capacitor	1
	C2 ⚠	ECQU2A104MN	0.1μF, 250V, Across-the Line Capacitor	1

CP CONTROL PANEL CIRCUIT

	Ref. No.	Part No.	Description	P/S
	INTEGRATED CIRCUITS			
	IC1	M37471M2196S	16 bit Microcomputer	1
	IC2	HD74LS138P	3 to 8 Decoder	1
	IC3~5	HD74LS07P	Hex Buffers	3
	TRANSISTORS			
	Q1~8	2SA830SB	Transistor	8
	DIODES			
	D1~11, 13, 15~48, 50~52, 57~64, 73~84, 87, 88~120	MA165	Diode	103
	D201~221, 250, 271, 275, 276, 278, 279, 287, 303, 311, 314~319	SEL4417G	LED (Green)	36
	D222~224, 249, 251~256, 266~268, 282~285, 290~295, 298, 306~310, 322	SEL4117RM	LED (RED)	30
	OSCILLATOR			
	X1	EF0EC4004A3	4MHz, Ceramic Oscillator	1

	Ref. No.	Part No.	Description	P/S
	SWITCHES			
	S1~11, 13~48, 50~52, 57~64, 73~120	EVQ21507K	Push Switch	106
	IC PROTECTOR			
	IP1 ⚠	ICP-N10T104	IC Protector	1
	VARIABLE RESISTOR			
	VR2	EVD07205B24G	20kΩ B,	1
	WIRES			
○	W1	QEXGRA01010J	Wire	1
	RESISTORS			
	R1, 2, 3	ERDS2TJ680	68Ω	3
	R5~8	ERDS2TJ680	68Ω	4
	R10~15	ERDS2TJ680	68Ω	6
	R16~23	ERDS2TJ472	4.7kΩ	8
	R24~31	ERDS2TJ103	10kΩ	8
	R32	ERDS2TJ333	33kΩ	1
	R33	ERDS2TJ101	100Ω	1
	R40~43	ERDS2TJ102	1kΩ	4
	CAPACITORS			
	C1~4, 8, 12~15	ECRF1H104ZF	0.1μF	9
	C9	ECEA0JKA221	220μF, 6.3V	1

BEND PITCH BEND CIRCUIT

	Ref. No.	Part No.	Description	P/S
	VARIABLE RESISTORS			
	VR1	EVA07115B14G	10kΩ	1
	VR2	EVA07015B54G	50kΩ	1
	RESISTORS			
	R1, 2	ER0S2CKF1001	1kΩ, ±1%	2

MKB1 MANUAL KEYBOARD 1 CIRCUIT

	Ref. No.	Part No.	Description	P/S
	INTEGRATED CIRCUIT			
	IC1	D65022CW-285	Gate Array	1
	DIODES			
S	D1~87	MA162A	MA150IR (SUB. Part)	87

	Ref. No.	Part No.	Description	P/S
	OSCILLATOR			
	X1	EF0G08004A5	8MHz, Ceramic Oscillator	1
	SWITCHES			
	S1~7	SSPG7004A	Rubber Switch (7 pcs. on one)	7
	S8~43	SSPG6004A	Rubber Switch (6 pcs. on one)	36
	RESISTORS			
	R1	ERDS2TJ101	100Ω	1
	R2, 5	ERDS2TJ103	10kΩ	2
	CAPACITORS			
	C1	ECCF1H681J	680pF	1
	C2	ECRF1H104ZF	0.1μF	1
	C3	ECCF1H681J	680pF	1
	C4	ECEA0JU470	47μF, 6.3V	1

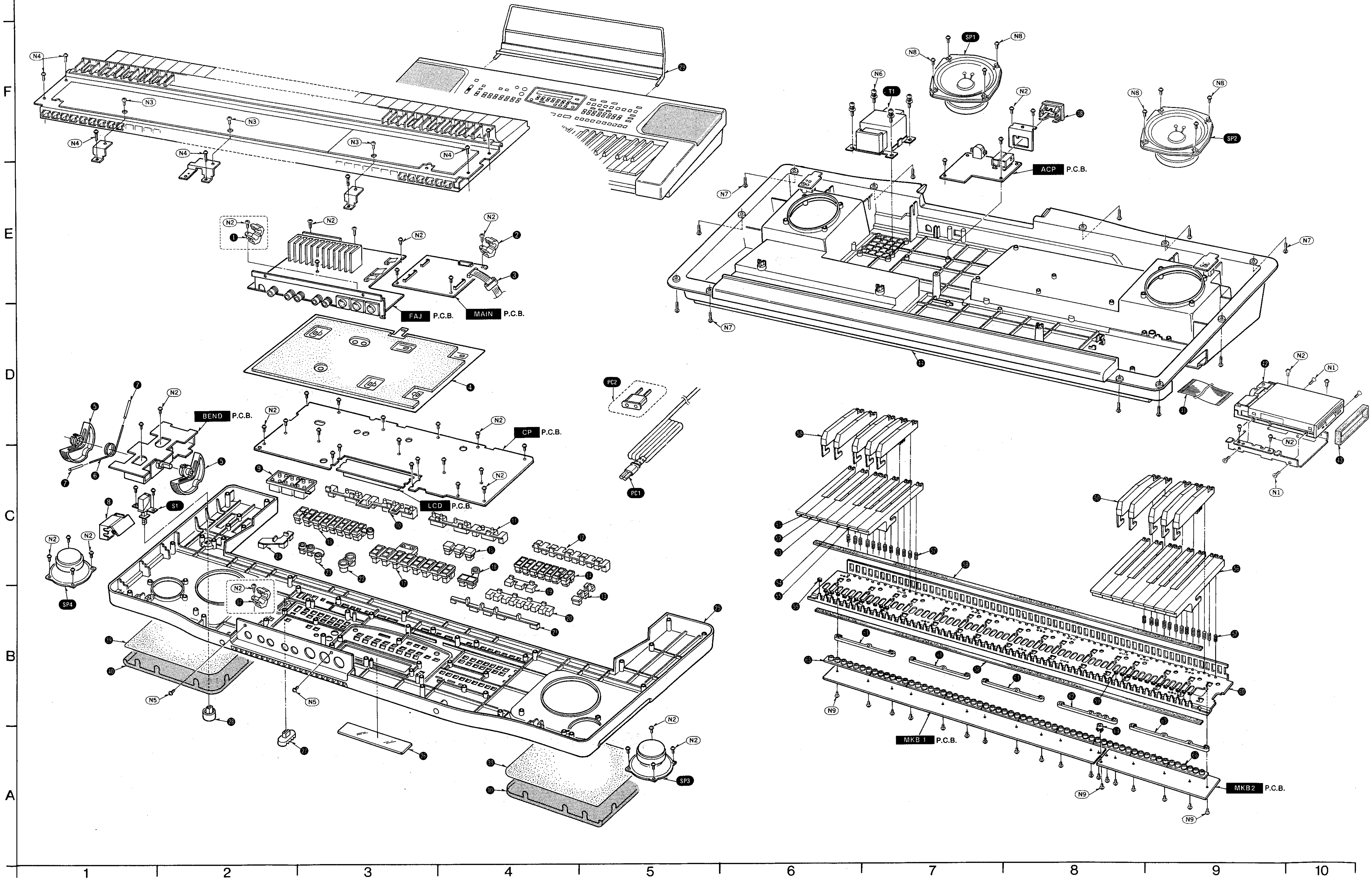
MKB2 MANUAL KEYBOARD 2 CIRCUIT

	Ref. No.	Part No.	Description	P/S
	DIODES			
S	D1~36	MA162A	MA150IR (SUB. Part)	36
	COMPONENT COMBINATION			
	Z1	EXBP88332JM	3.3kΩ × 8	1
	SWITCH			
	S1~18	SSPG6004A	Rubber Switch (6 pcs. on one)	18

■ WIRING PARTS

	Ref. No.	Part No.	Description	P/S
○	W1	QEXGSS04030A	Connector with Wire	1
○	W2	QEXGVH06080D	Connector with Wire	1
	W3	QEXGSS15020A	Connector with Wire	1
○	W4	QEXGSS15035A	Connector with Wire	1
	W5	QEXGSS08015AA	Connector with Wire	1

CABINET PARTS LOCATION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SP3
SP4
S1
PC1
PC2
FAJ P.C.B.
MAIN P.C.B.
BEND P.C.B.
CP P.C.B.
LCD P.C.B.
ACP P.C.B.
MKB 1 P.C.B.
MKB2 P.C.B.

REPLACEMENT PARTS LIST......Cabinet and Chassis Parts

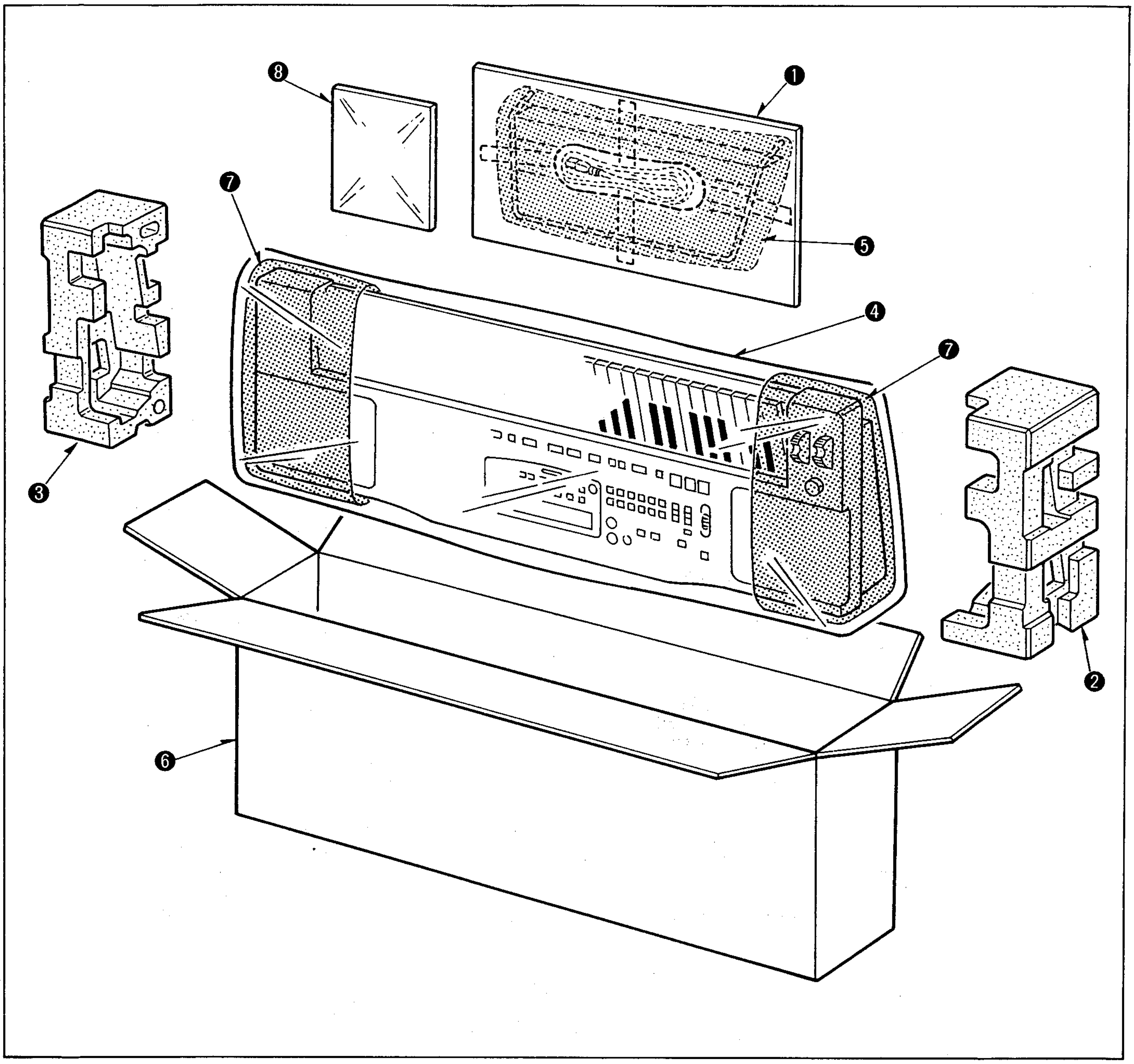
Notes:

1. The marking (RTL) indicates that the Retention Time is limited for this item. After the discontinuation of this assembly in production, the item will continue to be available for a specific period of time. The retension period of availability is dependant on the type of assembly, and in accordance with the laws governing part and product retention.
   After the end of this period, the assembly will no longer be available.
2. ○ mark are new parts.
3. Important safety notice
   Components identified by ⚠ mark have special characteristics important for safety. When replacing any of these components, use only manufacturer's specified parts.
4. For part No. with area mark, check the area when placing an order.
5. The raw material indication for synthtic resin
   In order to facilitate classification of parts of synthetic resin manufacture and to promote the recycling of natural resources, a raw material symbol for such parts is indicated in the Ref. No./Material column.

■ CABINET & CHASSIS PARTS

	Ref. No.	Part No.	Description	P/S
	SWITCH			
	S1 ⚠	ESB823V	Power Switch	1
	SPEAKERS			
	SP1, 2	EAS12P458A3	Speaker, 12cm 4Ω	2
	SP3, 4	EAS65PH31A3	6.5cm, 8Ω	2
	TRANSFORMER			
○	T1 ⚠	QTPG1M029A	Power Transformer, Others	1
○	T1 ⚠	QTPG1M030A	Power Transformer, X XS XR XD XT XB	1
○	T1 ⚠	QTPG1M028A	Power Transformer, M MC XM	1
	POWER CORD & PLUG			
	PC1 ⚠	SJAG65	Power Cord, Others	1
	PC1 ⚠	QJAG014AA	Power Cord, XR XL	1
	PC1 ⚠	QJAG013AA	Power Cord, M MC XM	1
	PC1 ⚠	VJA0733	Power Cord, EK XD	1
	PC2 ⚠	SJP5213-1	Attachment Plug, X XT XB	1
	CABINET PARTS			
	1	QLZG005A	Core, M MC XM	1
	1	QLZG006A	Core, EZ	1
	2	QLZG005A	Core, M MC EN EZ EW XL XM	1
○	3	QLZG011A	Core	1
○	4	QSCG065B	Shield	1
	5	SBNG4050A	Wheel Knob	2
	6	SUSG570A	Spring	1
	7	SHGG5010A	Tube	2
	8 PS	SHRG8390A	Cover, Power SW.	1
○	9	QGUG1298AA	Button	1
○	10	QGUG1300AA	Button	1
○	11	QGUG1301AA	Button	1
○	12	QGUG1302AA	Button	1
○	13	QGUG1307AA	Button	1
○	14	QGUG1303AA	Button	1
○	15	QGUG1299AA	Button	1
○	16	QGUG1304AA	Button	1
○	17	QGUG1305AA	Button	1
○	18	QGUG1313AA	Button	1
○	19	QGUG1306AA	Button	1
○	20	QGUG1309AA	Button	1
○	21	QGUG1308AA	Button	1
○	22	QGUG1310AA	Button	1
○	23	QGUG1311AA	Button	1
○	24	QGUG1312AA	Button	1
○	25 PS	QGPG0062AB	Control Panel	1
○	26	QKWG018AA	LCD Panel	1
	27	SBNG7070A	Knob, Main Volume	1
	28	SBCG1660A	Button, Power Switch	1
	29	QYAG3001AA	Music Rack	1
	38 ⚠ PS	SJS9231A	AC Inlet Cover, Others	1
	38 ⚠ PS	SJS9334A	AC Inlet Cover, M MC XM XL XR	1
○	39	QKNG1021A01	Speaker Net	2
○	40	QGMG0013AA	Panching Net	2
○	41	QEUGMQW60D	Flat Cable	1
	42	QAUG006AA	DDR Drive unit	1
	43	QMFG4151AA	Felt	1
	44 PS	QYKG050EB	Bottom Plate, Others	1
	44 PS	QYKG050FA	Bottom Plate, X XR XS XD XT XB	1
	50 AS	STBG2070A	Black Key	25
	51 AS	STBG1100A	White Key (C and F Key)	10
	52 AS	STBG1110A	White Key (D Key)	5
	53 AS	STBG1120A	White Key (E and B Key)	10
	54 AS	STBG1130A	White Key (G Key)	5
	55 AS	STBG1140A	White Key (A Key)	5
	56 AS	STBG1150A	White Key (Top Octave C Key)	1
	57	SUSG271A	Spring	61
	58	SHSG1970A	Felt	2
	59	SHGG9052A	Key Guide Rubber	61
	60	STBG6241A	Chassis	1
	61 PS	SHRGA9010A	Spacer	3
	62 PP	SHRG9760A	P.C.B. Holder	1
	63 PS	SHRGA9020A	Spacer	1
	64 PS	SHRGA9030A	Spacer	1
	65	SSPG7004A	Rubber Switch (7 pcs. on one)	1
	66	SSPG6004A	Rubber Switch (6 pcs. on one)	9
	67	QLZG005A	Core, except EZ	9
	SCREWS & WASHERS			
	N1	XSS3+6FZ	Screw	4
	N2	XTW3+10Q	Screw	48
	N3	XTV3+5C	Screw	2
	N4	XTW3+12Q	Screw	6
	N5	XTB3+10JFZ	Screw	2
	N6	QHDG002AA	Screw with Washer, Others	4
	N6	XYN4+F16S	Screw with Washer, M MC XM	4
	N7	XTW3+14TFZ	Screw	14
	N8	XTW3+12Q	Screw	8
	N9	XTW3+10T	Screw	8

PACKING



PACKING PARTS

	Ref. No.		Part No.	Description	P/S
	PACKING PARTS				
	1		QPGG0195AA	Card Board	1
	2	PS	QPNG0183AA	Pad	1
	3	PS	QPNG0184AA	Pad	1
	4	PE	QPFG002AA	Polyethylene Bag	1
	5	PE	SPHG1770A	Polyethylene Bag	1
○	6		QPGG0250AA	Carton	1
	7	PE	QPHG007AA	Polyethylene Bag	2
	OPERATING INSTRUCTION MANUAL				
○	10		QQFGKN1200AA	Operating instruction manual, EN	1
○	10-1		QQTG0290A	DANSK	1
○	10-2		QQTG0292A	ENGLISH	1
○	11		QQFGKN1200CA	Operating instruction manual, M	1
○	11-1		QQTG0291A	ENGLISH	1
○	12		QQFGKN1200DA	Operating instruction manual, MC	1
○	12-1		QQTG0292A	ENGLISH	1
○	12-2		QQTG0293A	FRANCAIS	1
○	13		QQFGKN1200EA	Operating instruction manual, Others	1
○	13-1		QQTG0292A	ENGLISH	1
○	13-1		QQTG0292A	ENGLISH	1
○	14		QQFGKN1200FA	Operating instruction manual, EZ EA	1
○	14-1		QQTG0294A	DEUTSCH	1
○	15		QQFGKN1200GA	Operating instruction manual, EW	1
○	15-1		QQTG0293A	FRANCAIS	1
○	15-2		QQTG0294A	DEUTSCH	1
○	15-3		QQTG0295A	ITALIANO	1
○	16		QQFGKN1200HA	Operating instruction manual, EF	1
○	16-1		QQTG0293A	FRANCAIS	1
○	16-2		QQTG0295A	ITALIANO	1
○	17		QQFGKN1200JA	Operating instruction manual, EH	1
○	17-1		QQTG0296A	NERDERLANDS	1
○	17-2		QQTG0293A	FRANCAIS	1
○	17-3		QQTG0294A	DEUTSCH	1
○	18		QQFGKN1200KA	Operating instruction manual, EP XM	1
○	18-1		QQTG0292A	ENGLISH	1
○	18-2		QQTG0297A	ESPANOL	1
○	19		QQFGKN1200LA	Operating instruction manual, X	1
○	19-1		QQTG0292A	ENGLISH	1
○	19-2		QQTG0297A	ESPANOL	1
○	19-3		QQTG0298A	中文	1
○	20		QQFGKN1200MA	Operating instruction manual, XT	1
○	20-1		QQTG0298A	中文	1